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ROCKY MOUNTAIN SPOTTED FEVER

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Western physicians are offered an unusual opportunity for study of Rocky Mountain spotted fever, one not commonly extended their colleagues in other sections of the country. Since identification of the first cases of the disease in the East shortly more than a decade ago, tick fever has stimulated additional interest among members of the profession from year to year because of the apparent rapid dissemination throughout our nation. Those in practice elsewhere are for the most part unfamiliar with manifestations of the disease. There is a distinct obligation to furnish them with accurate information regarding it. The subject of tick fever is an extensive one. No attempt should be made in a single article to deal with its numerous phases but rather to select those of major importance and to present material for further thought and consideration on a disease entity which can in time assume proportions of grave national significance.

Tularemia and tick fever are two diseases which have been dealt with from beginning to end by American investigators. More concisely, the latter condition has been dealt with almost in its entirety by those of the West. The risks run and sacrifices made by Dr. Walter Reed and his associates during their yellow fever studies are noteworthy. The ones of Dr. Howard Ricketts, his colleagues and contemporaries in their tick fever researches are equally outstanding. Unfortunately they have never received the recognition to which they are rightfully entitled. It is felt by some that in the future the name Rocky Mountain spotted fever as it applies to the disease will of necessity be changed. It is nationwide in distribution and carried by numerous species of ticks besides wood ticks. Although we commonly refer to the disease as "tick fever" for the sake of brevity, the present accepted terminology of Rocky Mountain spotted fever serves to identify it among medical men and to honor the original investigators forever in the pages of American medicine.

It is not known whether tick fever was originally a disease of the eastern and southeastern sections of the country, carried from there westward by emigrants in their heterogeneous wagon trains, or one of the West, carried eastward by more rapid means of communication at the turn of the present century. It is a rickettsial infection, closely related in many respects to typhus fever, a disease generally conceded to have been existent in certain parts of Europe and Asia for countless centuries. It is believed by most that tick fever was never absent from the Western states.

Prior to entrance of white men into the Rocky Mountain regions, references made to the disease by resident Indian tribes although legendary were nevertheless prevalent. It is probable that tick fever was endemic in localities where the savage nomads resided, because they carefully avoided infested regions as much as it was possible for them to do during tick seasons. Early explorers stated that medicine men related to them the Great Spirit would not allow travelers to enter much less traverse certain sections of His domain during the spring and early summer months. To do so invited His displeasure, manifested by illness and possible death. Subsequent investigations have shown the forbidden regions to be ones where the disease has apparently been prevalent from time immemorial. Lewis and Clark made no mention of a disease entity simulating tick fever or of ticks during their extensive wanderings in the western country. They passed through and camped in several infested localities at the optimum time of year. In other respects they kept rather complete and comprehensive records of their travels.

Other explorers did not tell of the disease. It is assumed that they were unfamiliar with its manifestations. It was not until Mormon emigrants traveled overland to Utah and gold seekers to California that the first comprehensive references to conditions simulating tick fever began to appear. Army surgeons stationed at the various frontier posts came in contact with the disease. They apparently confused it with conditions known to them in the East, altered in the raw western country by climate and environment.

Pioneers of the medical profession in the unsettled West were primarily workers. Not being recorders, they left little information for posterity on tick fever. Over a period of many years most of them were not aware that a new disease entity had been encountered. In time observant physicians, practicing in heavily infested areas, came to recognize that they were encountering a strange disease or group of diseases.

Progress in knowledge of tick fever was slow and tedious, observations on the disease often being confusing and contradictory. It was not until residents of the Bitter Root Valley of Montana began to doubt the expressed theory that it was caused by drinking snow water which had flowed through decomposed sawdust and to suspect wood ticks as vectors that tangible information was sought. A series of brilliant studies were undertaken. They revealed that tick fever was due to bites from infected wood ticks and isolated the causative micro-organism. Painstaking investiga-

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Drs. R. R. Spencer, R. R. Parker, G. E. Davis, H. R. Cox and N. H. Topping of the National Institute of Health, Dr. N. H. Savage, epidemiologist of the Wyoming State Health Department and others lent material and gave helpful suggestions, making the preparation of this paper possible.

tions followed. They were successful in establishing other important features of the disease, so that in time a clear concept of its many phases resulted.

As the western country became more populated, the number of cases of tick fever increased at an alarming rate, finally threatening to decimate certain sections of the newly won virgin territory. A laboratory was established for the purpose of further studies on the disease at Hamilton, Mont., in the center of the western endemic area, the site selected being one where need for added investigations appeared to be most acute. In time the laboratory was taken over by the United States Public Health Service and from a humble beginning it has grown to the modern, up to date and scientific institution with which we are familiar. The outstanding investigators in the Division of Infectious Diseases of the National Institute of Health have given us most of our present knowledge on tick fever and tick borne infections in general, as well as a great deal of that pertaining to other rickettsial diseases, notably typhus fever and allied conditions.[1]

The cause of tick fever is generally agreed to be a micro-organism, Dermacentroxenus rickettsii. It is a gram negative Rickettsia, best identified in infected tissues by means of modified Giemsa's stains. Rickettsias are small, intracellular, coccoid or bacillary bodies observed in the tissues of infected animals. They were first described in typhus fever by Ricketts, who succumbed to the illness and in whose honor they received their name. Rickettsias can be cultivated on living tissues. To the present, attempted growth on mediums free from living cells has met with failure. They probably represent a new type of micro-organism, bacterium-like in character, displaying the same characteristics of staining shown by spirochetes. It is possible that rickettsias are pathogenic organisms adapted to insect life and peculiar to insects.

They are most difficult to study because of their minute size. In ticks rickettsias undergo a morphologic sequence indicative of a life cycle. They multiply within nuclei of cells and in cytoplasm. In human tissues they exist mainly as relatively large, deeply stained lanceolate forms in pairs, measuring approximately 1 micron in length. Three definite types are recognized in ticks. They are seen early in the infection as faintly staining rods without granules. Minute rod-like bodies are later seen, displaying chromatoid granules. The third forms are relatively large and lanceolated, being similar to those found in mammalian tissues. It is possible that the micro-organism is passed between hosts in this form.

Dermacentor andersoni, the wood tick, is the vector of tick fever in the western endemic areas. It is a three host blood sucking tick. Blood is probably its only food. Three meals are necessary for it to complete a life cycle. Blood ingestion stimulates metamorphosis of larval into nymphal forms, nymphal into adult forms and brings about fertilization and egg laying in adult female ticks.

Female meet male ticks while feeding on larger wild or domestic animals. Following feeding, impregnation occurs. Female forms become enormously engorged, owing to the presence of ingested blood. In nine days they drop to the ground and hide away. Seven days later they begin to lay eggs at the rate of 300 a day. The eggs accumulate in a pile. The process takes a period of three weeks, during which time 2,000 to 7,000 eggs are laid. After an incubation period of thirty days they hatch into small six legged larval forms, which crawl to a convenient bush, weed or clump of grass, there lying in wait for small rodent hosts. They commonly attach themselves around the eyes or ears of the animals, partake of blood meals and after a period of six days fall to the ground and hide away. They molt into somewhat larger forms, the eight legged nymphs. Feeding and change take place in the midsummer months.

Nymphal forms lie dormant until spring. With advent of warm weather they seek similar vantage points, there lying in wait for rodent hosts. Following attachment they feed for a week, drop to the ground, hide away for three weeks and molt into adult male and female forms. By the time adult ticks have made their appearance it is too late in the season for them to seek hosts. They hibernate until spring, at which time they seek vantage points and lie in wait for larger wild or domestic animals. After attachment has occurred, the life cycle begins anew.

Tick fever is not a disease primarily of human beings but is one of animals and would exist if the former were eliminated from the picture. Ticks are not parasites of the human race. When individuals are bitten, the occurrence is purely an accident.

In the western section of the country the tick season begins early in the spring, usually around the middle of March. It continues for approximately three and a half months and tapers off around the first of July. The appearance and disappearance of ticks is governed by conditions of moisture and temperature. They may appear earlier one season than another and likewise disappear earlier. If adult ticks do not find hosts the first year, they hibernate through the winter and try the following spring. If they fail to find hosts at that time, they again hibernate and try again the second year. It is not unusual for them to survive at least four years when hosts are not found in the interim.

Wet damp weather makes ticks less active. As a result they are less apt to seek hosts. Warm dry weather brings them into full activity, so that they attach themselves readily. When ticks emerge in the spring from hibernation, their virus virulence is low. If subjected to incubation or allowed to ingest blood, they gain the ability to bring about frank infections. The phenomenon is called "reactivation." It accounts for the observation that but few cases of tick fever are seen for a variable period of time following appearance of ticks in the spring. After they have lain dormant all winter the infectiousness of virus carried by them is at a low ebb. With advent of warm weather, the vectors become activated and quickly infectious. As a result, the number of cases of the disease increase as the season advances. In any locality tick fever can occur in the colder months of the year, granted that there is an abundance of warm sunshine or adequate condi-

1. Badger, L. F.; Dyer, R. E., and Rumreich, A. S.: Infection of Rocky Mountain Spotted Fever Type: Identification in the Eastern Part of the United States, Pub. Health Rep. **46**: 463 (Feb. 27) 1931. Is Rocky Mountain Spotted Fever Present in the Eastern United States? editorial, J. A. M. A. **96**: 1146 (April 4) 1931. The Spread of Rocky Mountain Spotted Fever, editorial, Ann. Int. Med. **13**: 739 (Oct.) 1939. Ricketts, H. T.: Role of the Wood Tick in Rocky Mountain Spotted Fever and Susceptibility of Local Animals to This Disease, J. A. M. A. **49**: 24 (July 6) 1907; A Micro-Organism Which Apparently Has a Specific Relationship to Rocky Mountain Spotted Fever, ibid. **52**: 379 (Jan. 30) 1909. Rumreich, A. S.; Badger, L. F., and Dyer, R. E.: The Typhus-Rocky Mountain Spotted Fever Group: An Epidemiologic and Clinical Study in the Eastern and Southeastern States, Pub. Health Rep. **46**: 470 (Feb. 27) 1931. Toomey, Noxon: Mountain Fever and Spotted Fever of the Rocky Mountains, Ann. Int. Med. **5**: 585 (Nov.) 1931; Typhus-like (Spotted) Fever from Tick Bite, ibid. **5**: 1296, 1932. Baker.[4] Cohen.[4] Parker: Rocky Mountain Spotted Fever.[2] Pincoffs and Shaw.[4] Ricketts and Gomez.[5] Symposium: Rocky Mountain Spotted Fever.[5]

tions of artificial heat. These factors release ticks from their dormant state, reactivating them so that they move about in search of hosts.

During cold months of the winter, nymphal and adult forms lie in hibernation under decaying vegetable matter, logs or stones or in the thick coats of animals. Eggs and larval forms are quickly killed by cold or inclement weather, but adult and nymphal ones are remarkably resistant to such changes. Larval, nymphal and adult ticks feed during successive years. Larval and nymphal forms pass the virus of infection to adult forms of the same generation, and adult female ticks pass it to their progeny by means of eggs which they lay. Adult ticks infect one another during the act of copulation. Infection from eggs is carried by larval and nymphal forms of that generation.

Transmission of tick fever by species other than wood ticks is apparently possible. By making modifications for altered life cycles and host habits of other types, maintenance of the disease is explained wherever it exists. At least eight other species have been incriminated. It is known that they serve as carriers of the infection in nature or both as carriers and transmitters of it to human beings. The potentialities of the majority of them with the exception of Dermacentor variabilis, the common dog tick, are not completely understood. As ticks are widely distributed in nature, for every section of the country where tick fever has made its appearance native species have been isolated and their potentialities partially identified.[2]

The gross or macroscopic findings detected in those who have succumbed to tick fever are neither numerous nor distinctive. The petechial eruption persists after death, and an early rigor mortis sets in. The muscles are normal. The skin demonstrates subcutaneous hemorrhages. Gangrene may be present, commonly affecting the scrotum, faucial pillars or soft palate. The peritoneal, pleural and pericardial cavities are normal. The lungs show hypostasis. Occasionally bronchopneumonia is found. The heart may have hemorrhages into the pericardium. The right side is distended with blood, the left side contracted. No lesions of the aorta, vena cava or large vessels of the extremities or trunk are found. The spleen is enlarged, being soft or firm in consistency. The liver demonstrates fatty changes. It is enlarged and pale, and injection is apparent. There is stasis of bile in the ducts. There are no gastrointestinal lesions. Pancreatic enlargement may exist. The kidneys are at times enlarged, being injected and degenerated or fatty. There may be injection of the renal capsules and all serous membranes. The uterus and bladder show no lesions. The lymph nodes are usually enlarged. Central nervous system lesions consist mainly of injection of the meningeal blood vessels.

Microscopic findings are more typical. Certain variations are said to exist between eastern and western forms of the disease, to which the interested reader is referred for further study. The alterations typical of the disease are found in the blood vessels of the skin, subcutaneous tissues, testes and appendages. Blood vessels of the skeletal muscles are spared. Early vascular lesions consist of proliferations of the vascular endothelium, accompanied by infiltration of the vessel walls with mononuclear cells and polymorphonuclear leukocytes. Thrombus formation follows degeneration of the proliferated endothelium. There are heavy perivascular accumulations of mononuclear cells, presumably of endothelial origin. The endothelial reaction, followed by necrosis of the small blood vessels of the skin, is the mechanism of cutaneous and subcutaneous hemorrhages. Other features of the rash are explained by the occurrence of occluding thrombi in small arteries and veins. The changes brought about by the disease are so typical that tick fever may well be called a condition of the peripheral blood vessels or an acute specific endangiitis.

The minute causative micro-organism may be demonstrated with considerable difficulty in the blood vessel walls in the endothelium and smooth muscle fibers of the media in relationship to thrombi. Vascular and diffuse cellular lesions and focal necrosis of the heart muscle and at times lesions of the vasa vasorum of the aorta are found. Capillary and sinus thrombosis and focal necrosis of the liver and spleen occur, accompanied by reticulum cell swelling. The spleen shows pronounced engorgement, there being extensive phagocytosis of red blood cells. The lymphoid tissue is decreased in amount. A reticulum macrophage reaction occurs in the lymph nodes, which may terminate in necrosis. Adrenal alterations are either slight or absent. The accumulation of endothelial cells in the blood vessels of all organs including the gastrointestinal tract indicates the general reaction to the disease. No particular lesions of the central nervous system are recorded.[3]

Tick fever has a usual incubation period of from four to eight days, the extremes being two to twelve. The prodromal manifestations resemble those of any febrile illness, there being malaise, headache, anorexia and chilly sensations. They vary in degree, lasting an average of two or three days.

The disease usually has abrupt onset, initial symptoms often appearing in the late afternoon or early evening. There is a definite chill, pronounced frontal headache and severe aches and pains in the muscles, bones and joints. The latter are more pronounced in the back and lower extremities. Firm pressure over the calf muscles or free motion of them often elicits pain. Crawling or attached ticks are sometimes detected on inspection of the patient. Although none are usually found, indurated sites of former attachment may be palpated. Inspection of the bite areas reveals nothing unusual with the exception of occasional discolorations from subcutaneous blood extravasation. The regional lymph nodes are at times palpable and tender.

There may be an initial elevated macular rose colored eruption, similar to that common in measles. Its presence is not distinctive. The petechial eruption first appears on the wrists and ankles twenty-four to

2. Mokler, V. A.: Rocky Mountain Spotted Fever (Tick Fever, Mountain Typhus, Trail Fever), J. Lancet **54**: 781 (Dec. 15) 1934. Parker, R. R.: Certain Phases of the Problem of Rocky Mountain Spotted Fever, Arch. Path. **15**: 398 (March) 1935; Ticks of the United States in Relation to the Disease in Man, J. Econ. Entomol. **30**: 5, 1937; Rocky Mountain Spotted Fever, J. A. M. A. **110**: 1185 (April 9), 1273 (April 16) 1938. Parker, R. R.; Philip, C. B., and Jellison, W. L.: Rocky Mountain Spotted Fever: Potentialities of Tick Transmission in Relation to Geographic Occurrence in the United States, Am. J. Trop. Med. **13**: 341 (July) 1933. Pinkerton, Henry, and Hass, G. M.: Spotted Fever; Intranuclear Rickettsiae Studied in Tissue Culture, J. Exper. Med. **56**: 151 (July) 1932. Sampson, J. S.: Rocky Mountain Spotted Fever: A Review of the Literature, with Some Previously Unreported Notes from a Number of Wyoming Physicians, Senior Thesis at the University of Nebraska College of Medicine, 1936. Baker.[4] Carey and Duncan.[6] Clinical Notes: Observations on Rickettsial Diseases.[4] Hutton.[6] Pincoffs and Shaw.[4] Ricketts: Role of the Wood Tick;[1] A Micro-Organism.[1] Symposium: Rocky Mountain Spotted Fever.[5] Toomey.[1] Wolbach.[3]

3. Bauersfeld, E. H.: Rocky Mountain Spotted Fever with Unusual Features, J. A. M. A. **112**: 1819 (May 6) 1939. Lillie, R. D.: Pathology of Eastern Types of Rocky Mountain Spotted Fever, Pub. Health Rep. **46**: 2840 (Nov. 27) 1931. Maxey, E. E.: Rocky Mountain Spotted Fever, Northwest. Med. **30**: 512 (Nov.) 1931. Richards, G. G.: Rocky Mountain Spotted Fever, Ann. Int. Med. **6**: 1207 (March) 1933. Wolbach, S. B.: Rocky Mountain Spotted Fever: Pathology and Etiology, Third Annual Report, Montana State Board of Entomology, 1919, p. 55. Carey and Duncan.[6] Parker: Rocky Mountain Spotted Fever.[3]

forty-eight hours after the onset of tick fever. It is the most reliable early manifestation of the disease. It may be overlooked in individuals of dark skinned races or ones much tanned on the extremities from overexposure to the elements. It soon becomes sharply perceptible and spreads from the initial locations in a centripetal fashion over the chest and abdomen and thence to the remainder of the body (figs. 1 and 2). It is always more pronounced on the extremities than elsewhere. Extension is complete in two or three days. The associated generalized aches are then relieved to a degree, but the temperature remains high. The petechial eruption is thought to be the most characteristic finding in tick fever, but diagnosis of the disease must not be made on its presence. Some patients, particularly those only mildly affected or those previously vaccinated, never show a rash or have an insignificant one; others die before its appearance from toxemia, and yet others demonstrate atypical or bizarre eruptions. Petechiae do not disappear on pressure except during the initial stages of tick fever. They are accentuated by tourniquet application. They may eventually involve the palms of the hands, soles of the feet and mucosa of the inner cheeks and throat. A patient so erupted is truly spotted or speckled, having a rash which covers the entire body. Petechiae may appear in successive crops, each of which has an average life cycle of two weeks.

The eruption tends to remain discrete in milder cases of tick fever. It is first rose red and later bluish red. Discreteness does not persist in more severe ones. The petechiae increase in size and become confluent, finally coalescing and then becoming purpuric. A mass of such areas may involve the entire body. If terminal gangrene ensues, with sloughing of the soft palate, scrotum or other dependent portions of the body, the afflicted person presents a tragic appearance (figs. 3 and 4).

The petechial eruption gradually fades as patients recover. Fading takes much longer in severe cases than in mild ones. It occurs with the fall in temperature. There may be desquamation, either branlike in character or so complete that casts of body parts are

Fig. 1.—Petechial eruption on upper extremities during early stages of Rocky Mountain spotted fever. The original sites were on the wrists, but extension to the hands and lower arm regions has begun.

exfoliated. Pigmentation remains at former petechial sites. It may be followed by formation of minute cicatrices. For several months following recovery from tick fever, overexposure to heat or cold often brings out temporary manifestations of the eruption. They last only a short while and clear when the skin temperatures again return to normal.

Temperature rises abruptly within the first twenty-four hours of the onset of the disease. There are but one or two slight remissions, a fastigium of 103 to 105 F. being reached by the beginning of the second week in mild cases, by the second or third day in more severe ones. With recovery from acute manifestations

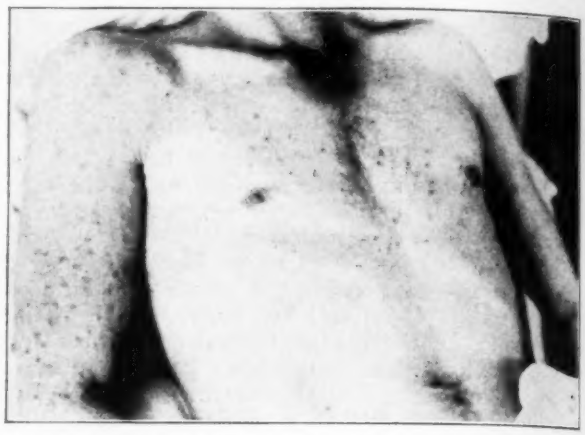

Fig. 2.—Petechial eruption following extension over the body. The lesions remain discrete but are well distributed over the arms, chest and abdomen.

of the illness, it falls either by rapid or by slow lysis, rarely by crisis unless the case is an abortive one. There may be slight temperature remissions in mild cases, but it is constant to slightly rising in more severe ones. It is sometimes distinctly remittent after the first few days, particularly in moderately severe protracted cases, but never ceases until terminal lysis has occurred. The temperature may be normal from the first or subnormal in very severe forms of the disease, to rise sharply in the twenty-four hours preceding death, or it may be high from the first, then drop to normal and rise again before death occurs. If the temperature drops uneventfully to normal and later shows a secondary rise without apparent justification, complications must be sought for.

Early in the disease the pulse is of good volume. It is slow, averaging 90 beats a minute. Early disproportion of pulse and temperature ratios is one of the characteristics of tick fever at its onset. When myocardial weakening ensues in severe cases as a result of toxemia, loss of strength and volume of the pulse occurs. It rises out of proportion to the temperature. As a result of cardiac involvement the blood pressure falls and the first heart sound becomes muffled and indistinct.

The respirations are at first normal or but slightly increased. They accelerate in severe cases, with alterations of the pulse and temperature ratio. Increase in rates often signify the development of bronchopneumonia.

The foregoing manifestations are considered to be the most typical ones in tick fever. There are other findings. They exist in various combinations, their intensity often depending on the severity of the existent disease process.

Patients moderately or severely ill with tick fever are severely prostrated. The senses are dulled. Although afflicted persons appear rational to superficial examination, close inspection reveals that they are mentally confused. There is amnesia. It may persist until the eruption is complete or for some time afterward. Patients appear anxious and concerned over their illnesses. The eyes are injected and the cheeks flushed.

There may be photophobia. Nervous disturbances such as lethargy, restlessness or nervous irritability are frequent. Children are prone to convulsions and may die during them. Insomnia is at times troublesome. There can be active delirium, particularly in severe cases during the terminal stages of the illness. Muscular twitchings or fibrillatory tremors are common. Muscle tonus is definitely increased throughout the body. Aches and pains in the muscles persist throughout the disease. At times the distress from them is agonizing. When located in the muscles of the abdomen an acute surgical condition can be simulated. Movement of the neck muscles often elicits slight stiffness.

The tongue is swollen and moist early in the disease. In severe cases it becomes dry and coated, with a darkened border and prominent papillae. The tongue often protrudes from the mouth when profound swelling ensues. It becomes fissured and covered by sordes if coma occurs. There is pharyngeal engorgement, accompanied by a dry, hacking nonexudative cough indicative of bronchial irritation. There is often profound chilliness. It is not shaking or chattering in character but tends to be most persistent and drawn out, frequently lasting for a period of from two to four hours.

The skin is tender. Many patients complain bitterly of pressure from light bed coverings or drafts of air. As the disease progresses it becomes dark red or bluish in more severe cases, the color changes being most evident on the back and thighs. An ill defined bluish discoloration is commonly seen beneath the skin surfaces when patients are examined under satisfactory light conditions. Dependent portions of the body such as the scrotum or soft palate may slough in severe cases. Necrosis can occur, commonly affecting the prepuce, toes, fingers or ear lobes. Alopecia sometimes appears. It may be permanent.

There is anorexia. Nausea and vomiting take place in some cases, the regurgitated material at times containing blood. Diarrhea occasionally occurs; the stools may be bloody. Constipation is usual. It can be most obstinate and difficult to overcome. Sphincter control is often lost in severe cases. The spleen is enlarged and tender, the liver sometimes demonstrating similar findings. There is jaundice. It is nonobstructive in type and tends to deepen definitely in the terminal fatal stages.

Fig. 3.—Appearance of the right hand in the terminal stages of a fatal case of Rocky Mountain spotted fever. Necrosis of the fingers has begun, later eventuating in gangrene, the skin of the dorsum of the member being ichthyoid in character and commencing to exfoliate.

Increased muscle tonus may result in an inability to void urine. At times there is incontinence. Urination can be distinctly painful. A lessened secretion of urine sometimes occurs. It is caused either by changes in the kidney or by a failing circulation and is frequently accompanied by edema. There may be total repression of urine formation at the end in fatal cases of tick fever.

The blood findings are not unusual. There is a lowered red blood cell count and hemoglobin content later in the disease, resulting in a secondary anemia. The total white blood cell count averages 12,000 to 15,000. It may be as high as 30,000. A relative mononucleosis is common, the average being 10 to 12 per cent.

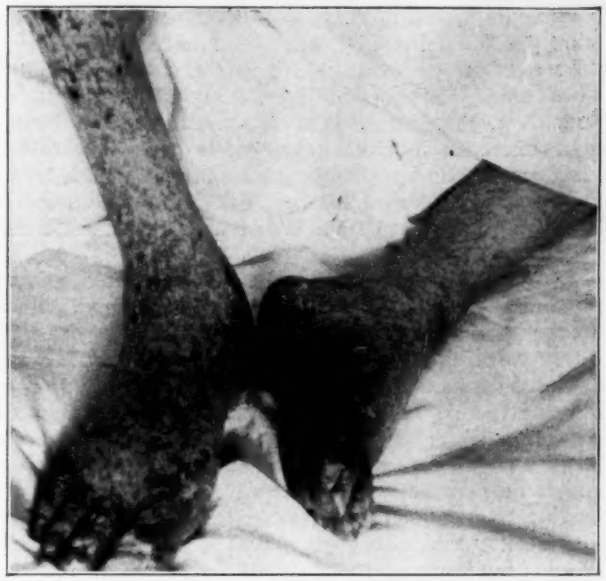

Fig. 4.—Advanced terminal necrosis of the toes and feet of a fatal case during the final stages of Rocky Mountain spotted fever, later eventuating in massive gangrene of the parts.

The urine may be highly colored. There is an increased specific gravity. Old or debilitated persons commonly show albumin in varying amounts, together with acetone bodies and microscopic alterations. Younger persons or those who have previously enjoyed good health do not manifest urinary changes so frequently.

Blood chemistry studies in tick fever have never been conclusively worked out. There are no significant spinal fluid findings. Demonstrations of the causative micro-organism of the disease in blood smears are so inconstant that time and energy expended in search for them is not worth the effort involved.[4]

Tick fever may be confused with various other infections, particularly when the disease appears unexpectedly in a locality or if encountered by those unfamiliar with its manifestations. The diseases most commonly causing confusion are typhoid and allied conditions, severe measles, smallpox, epidemic meningitis especially of the septicemic variety, undulant fever, streptococcic septicemia, purpura, typhus fever and Colorado mountain fever. It is not within the scope of this paper to discuss the conditions, references being made to them elsewhere. For the most part confusing diseases can be ruled out by careful histories, examinations and repeated observations of the infected persons together

4. Baker, G. E.: Rocky Mountain Spotted Fever, with Reference to Prevention, Recognition and Treatment, Rocky Mountain M. J. **35:** 36 (Jan.) 1938; Rocky Mountain Spotted Fever, Ann. Int. Med. **17:** 247 (Aug.) 1942. Clinical Notes: Observations on Rickettsial Diseases, Seminar **4:** 6, 1942. Cohen, M. H.: Unusual Case of Rocky Mountain Spotted Fever in Southeastern Pennsylvania, J. A. M. A. **115:** 1441 (Oct. 26) 1940. Pincoffs, M. C., and Shaw, C. C.: Eastern Type of Rocky Mountain Spotted Fever: Report of a Case with Demonstration of Rickettsiae, M. Clin. North America **16:** 1097 (March) 1933. Carey and Duncan.[6] Hutton.[6] Parker: Rocky Mountain Spotted Fever.[2] Symposium: Rocky Mountain Spotted Fever.[5]

with confirmatory laboratory studies. The three diagnostic procedures ordinarily employed are the infection test, the Weil-Felix agglutination reaction and the protection or virus neutralization test. They are not dealt with in this article. References to them may be found in other papers.[4]

Tick fever could be completely eradicated were it possible to dispose of vectors of the disease. The undertaking is an impossible one. Conditions favorable to ticks exist in all localities where the disease is found. These allow hosts for both immature and adult forms to flourish in abundance. Vegetation and physical conditions exert an indirect influence, because they afford suitable surroundings for animals serving as tick hosts. Once established in a locality, ticks continue to thrive if there are sufficient numbers of wild or domestic animals present.

Prevention of exposure to infection is secured only by remaining out of localities where ticks abound. Such precautions are not at all times possible or feasible. Those entering infested localities should wear trousers, gathered by some means at the bottoms in order to prevent vectors from crawling up the legs. Ticks do not jump on those who pass their vantage points but lie in wait on low grass or vegetation not over a foot and a half above the surface of the ground, actively moving their numerous serrated legs, by which means they seek transfer to objects that brush by. Clothing should have a minimum of seams and openings in order to prevent their ingress to body surfaces. Smooth clothes prevent ticks from gaining footholds, yet those with a rough nap impede their progress once they have got on the body covering. It is a good plan while in tick infested localities to pass the hand occasionally over the back of the neck in order to detect crawling ticks. They may gain access to the body by working themselves beneath the collar.

Clothing should be removed at least two or three times a day and the body thoroughly examined for the presence of crawling or attached ticks. As they hide away in body folds, crevices and hairy portions free from rubbing, a diligent search must be conducted. Camps should be located where rodents are few, preferably in places where no low grass, sagebrush or small bushes are growing. Wooded areas along creek banks are best avoided, as are the vicinities of old trails and roads. Ideal camping spots are usually where standing timber is present with a minimum of low vegetation. Persons must again inspect their persons, clothing and bedding before retiring for the night in the open. The precaution is most important when 2 persons sleep in close proximity. Infected ticks may attach themselves to both persons successively. The first one may escape infection or be but mildly ill, the second one more seriously so from reactivation of virus in the tick vector by blood ingestion from the first victim. While in tick infested localities it is unwise to leave bedding spread on the ground during the day. It attracts ticks, often from a considerable distance. After return from trips, clothes and bedding should be carefully gone over, aired and then removed to buildings not used for human habitation. Once ticks have taken up their abode in a location, eradication is apt to prove most difficult and uncertain.

When ticks gain access to the body surfaces they move slowly about for a variable length of time, during which they seek suitable locations for attachment. The process is not noticeable to victims, nor are they usually aware of crawling ticks. It is supposed that vectors of the disease are not actively infectious until several hours have elapsed, but little reliance can be placed in this contention. When located, attached ticks must be removed without delay. The procedure is one requiring considerable skill and perseverance if it is to be safely accomplished. As a rule the head of the tick is embedded beneath the surface of the skin, the body remaining free and protruding at an angle from it. The head is held firmly in place by mouth parts, so that hasty or careless plucking often serves to remove the body alone, leaving the remainder in place to serve as a potential source of infection. Gentle traction may be successful in removing the tick. Close inspection then reveals it to be intact, often with a small fragment of epidermis caught in the mouth parts. Failing in the procedure, a small piece of epidermis in which the tick's head lies embedded must be elevated with a pair of tweezers and a tentlike wedge of tissue snipped with a fine pair of scissors. The maneuver is accomplished in a matter of seconds and insures complete removal. Resultant wounds from tick extraction by any means are to be thoroughly cauterized by means of phenol, silver nitrate, iodine or similar agents. A light dressing can then be applied. Care must be exercised so as not to crush ticks. If the accident occurs, the discharged contents should be thoroughly washed from the hands by soap and water, care being exercised not to irritate the skin. For the reason that virus is apt to be highly infectious, even on unabraded skin surfaces, precautions for its removal are most important. Removal of engorged ticks with bare hands is a dangerous practice.

Tick vaccine gives protection against tick fever. It is prepared by the Rocky Mountain Laboratory of the National Institute of Health, Division of Infectious Diseases, at Hamilton, Mont., and is dispensed to physicians desiring it for the purpose of immunizing those who run the danger of being exposed to the disease. Tick vaccine is made in two types, the older one from tick tissues and the more recent one from embryonic chick tissues. The chick embryo type has not superseded the vaccine prepared from ticks, and, although it is less likely to cause reactions, evidence regarding its immunizing value is not so certain. Recommended dosage of tick tissue vaccine for those who have never previously been vaccinated is 2 cc., repeated at an interval of from seven to ten days. If the particular locality is one in which serious cases of tick fever are known to originate, the second injection must be followed by a third, administered after the same time interval. Children receive a proportionate amount of material, 1 cc. being recommended for those 10 years of age or younger. Dosage of the chick embryo type is slightly different, in that three injections of 1 cc. each, administered at the same time interval, are recommended. For individuals who have been vaccinated each of the past three years, two injections of 1 cc. each of either the chick embryo or tick tissue types are suggested.

The degree of protection afforded by vaccine and the duration of such protection varies with vaccinated persons and the virulence of infection to which they are exposed. As a rule, those vaccinated in the spring of the year retain a considerable degree of immunity for at least the remainder of that year. This is usually sufficient to afford full protection against relatively mild strains of the disease but is progressively less effective as virulence of the virus is increased. Nevertheless,

against even the more severe forms of tick fever it is usually adequate to ameliorate materially the usual stormy course of the infection so as to insure ultimate recovery. It is probable that a certain proportion of individuals carry an indefinite degree of immunity into the second year, even against highly virulent strains

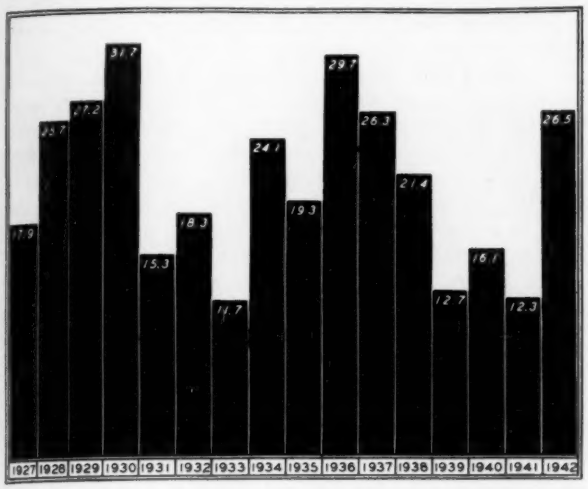

Fig. 5.—Case fatality rates from Rocky Mountain spotted fever in Wyoming from 1927 to 1942. 1930, 1936 and 1942 were years of high fatality rates, 1927, 1933 and 1939 ones of low fatality rates. There is apparently a definite six year occurrence of high and low rates. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.)

of virus. The degree of protection appears to be greater in those who have been vaccinated for two or more successive years. Evidence does not indicate that any considerable degree is carried into the third year. In order to afford the greatest degree of protection possible, it is recommended that immunization be performed each year.

Intramuscular administration of vaccine is not known to bring about more than a slight constitutional reaction. The same precautions must be observed as with the injection of any biologic product intended for an immunization procedure. Immediately there ensues a sensation of fulness at the site, followed by one of smarting or stinging. Itching may occur, exacerbated by scratching or rubbing the part. A generalized malaise sometimes is noticed, often with a slight febrile reaction. The manifestations are usually transitory, subsiding before subsequent administrations of the material. These usually result in much milder symptoms or none at all. Reactions to the use of vaccine have not been so prevalent in recent years. It has been purified and standardized, and of late embryonic chick tissue preparations prepared by the yolk sac method of Cox have been extensively used.[5]

Treatment of tick fever is purely symptomatic and supportive in character. There is no specific. Its absence must not predispose to an attitude of helplessness and hopeless inactivity on the part of those caring for the disease. Carefully directed symptomatic care and supportive measures aid patients to eliminate toxins from their bodies, support them during the period of invasion and assist them in every means possible. Vigorous yet well directed procedures bring about successful outcomes for many patients whose recovery appears hopeless at the time they are first placed under care.

Bed rest with good nursing care is necessary from the beginning of the illness in order to conserve strength as much as possible. At the onset patients frequently do not appear ill enough to make the precautions necessary, but the rapidity with which serious manifestations appear make those in attendance thankful that they have been insisted on. Patients must be kept as quiet as possible, both mentally and physically. Baths, packs and simple sedation are often effective. If codeine or even morphine is indicated, they must be used as freely as necessary. Bath temperatures should be 70 F. or above to be safely tolerated. Cold or tepid bathing often results in shock to seriously ill victims of tick fever.

The gastrointestinal tract needs careful watching. Regular elimination may be facilitated by mild enemas or cathartics. The diet should be nourishing, adequate and easily digestible. Frequent urinary examinations are indicated. They detect pathologic alterations at their onset. Fluids must be freely given by mouth if tolerated. When there is excessive vomiting they may be administered by other routes. Adequate amounts combat the ever present trend to acidosis.

It may be necessary to support the heart should myocardial weakening appear imminent. Care to the skin is important. Equal parts of hamamelis water and alcohol in water applied once or twice a day as a sponge often comforts and invigorates severely ill patients. It removes soreness from muscles and revives them. They are less mentally dulled, appearing stronger for several hours following the procedure. Mouth hygiene is important. Oral antiseptic washes rid the region of accumulated waste products, so that sufferers are made more comfortable during the acute phases of the illness.

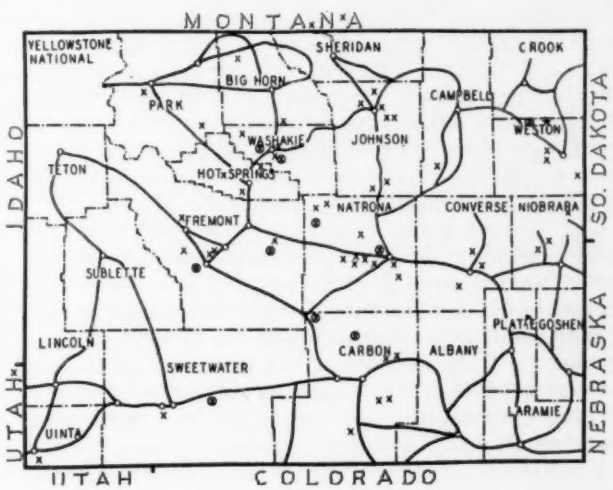

Fig. 6.—Cases and deaths by sites of infection for 1940. There were 62 cases of Rocky Mountain spotted fever with ten deaths. Three of the cases were out of state infections, 2 in Montana and 1 in Utah, but were reported by Wyoming physicians. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.) Symbols on maps: X, cases; X in circle, deaths; *, infected in Wyoming, death in adjoining state.

Convalescent serums and transfusions have been resorted to, apparently without beneficial effect. Autohemotherapy has been used by some physicians, 10 to 20 cc. of citrated blood from the patient being read-

5. Cox, H. R.: Use of Yolk Sac of Developing Chick Embryo as Medium for Growing Rickettsiae of Rocky Mountain Spotted Fever and Typhus Groups, Pub. Health Rep. **53:** 2241 (Dec. 23) 1938; Rocky Mountain Spotted Fever: Protective Value for Guinea Pigs of Vaccine Prepared from Rickettsiae Cultivated in Embryonic Chick Tissues, ibid. **54:** 1070 (June 16) 1939. Ricketts, H. T., and Gomez, L.: Studies in Immunity in Rocky Mountain Spotted Fever, J. Infect. Dis. **5:** 221, 1908. Symposium: Rocky Mountain Spotted Fever, Internat. M. Digest **41:** 312 (Nov.) 1942. Baker.[4] Carey and Duncan.[6] Hutton.[6] Parker: Rocky Mountain Spotted Fever.[3]

ministered intramuscularly. The procedure is repeated as often as necessary. Many drugs have from time to time been lauded as specifics in the treatment of tick fever. It is agreed that the action of the majority of them is not certain and for that reason they have been generally discarded. Drugs of the sulfonamide series

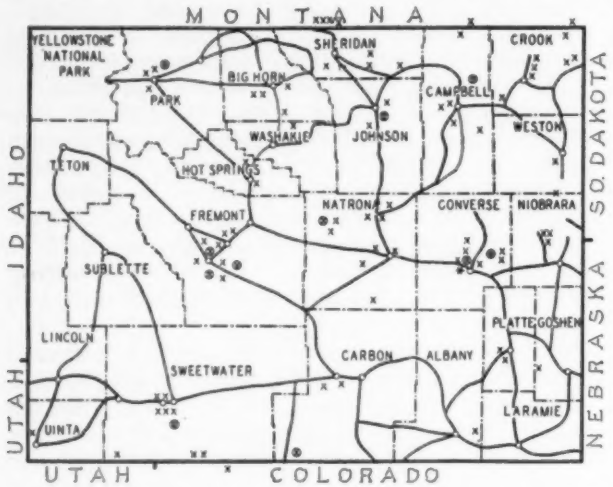

Fig. 7.—Cases and deaths from Rocky Mountain spotted fever in Wyoming by sites of infection for 1941. There were 89 cases with eleven deaths. Seven of the cases were out of state infections, 6 in Montana and 1 in Colorado, but were reported by Wyoming physicians. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Depart.) * Infected in Wyoming, died in Colorado.

have little or no value in the management of tick fever, according to information available on them at this time. If bronchopneumonia, phlebitis or other complications due to secondary invaders appear, their use is certainly justified, the drugs of choice depending on the nature of the invading micro-organisms. Recently Topping has produced an immune serum in rabbits, using tick virus as the antigen. The rabbit serum has been shown to contain large amounts of antibodies. Satisfactory results have been achieved from its use, at first in animal experimentation and later in an increasing number of human beings. Tick vaccine must never be used for treatment. It has no beneficial action when used for this purpose. In milder cases its use is too drastic to be justified; in more severe ones it may prove dangerous as regards ultimate recovery.[6]

Tick fever appears to have a cyclic tendency, more cases appearing during some years than others; the reason for the trend is unknown, but it is believed to depend on local and regional conditions. The number of individuals exposed, the abundance of ticks, the percentage of ticks carrying infection, the capability of virus to produce frank infections and the possible relationship between the prevalence of ticks and animal hosts seem to play a part.

The highest incidence of tick fever in the western area is from the early spring into the early summer months. In the mountainous regions it is highest during the late spring months, owing to delay in the advent of warm weather. In the eastern areas the disease is more prevalent in the late spring and early summer months, but cases can occur in the fall of the year.

The virulence of tick fever varies greatly in different areas but appears to remain fairly constant in any one region. Reasons for the variance are now known. It is supposed that repeated passages of the virus through successive animal hosts play a part. It is justifiable to speak of mild, moderately severe or severe types of the disease, in view of the great differences in virulence of the infection in various localities and sections of the country.

Practicing medicine in the western endemic area, in a section of Wyoming where tick fever occurs with considerable frequency, I have had occasion to make extensive study of its various aspects. It is possible that the number of individuals stricken with the disease is beginning to show a yearly decrease. Education of the public is a possible explanation for the reduction. Local residents have become aware of the serious potentialities of tick fever. As a result, many of them take very definite precautions in order to avoid infection.

Tick fever in this particular locality is moderately severe to severe in type. Seldom is one of mild intensity seen. As fatalities from the disease closely parallel in number the severity of existent infections, deaths must be expected. For a period of time from 1927 to 1942, during which accurate statistics on tick fever have been kept by the Wyoming State Health Department, the average mortality for our (Natrona) county has been 20 per cent. During the same time interval the average for the entire state has been 19.5 per cent. As it is believed that the mortality from the disease for the United States is in the vicinity of 12.5 per cent, both local figures are considerably higher than those for the nation as a whole (figs. 5, 6, 7, 8 and 9).

Tick fever has always demanded earnest consideration from members of the local medical profession, residents in the community and surrounding rural areas. For a period of the past fifteen years every fifth person who has contracted the disease has succumbed to it. Symptomatic and supportive measures offer much in treatment, but unfortunately they are not sufficient in

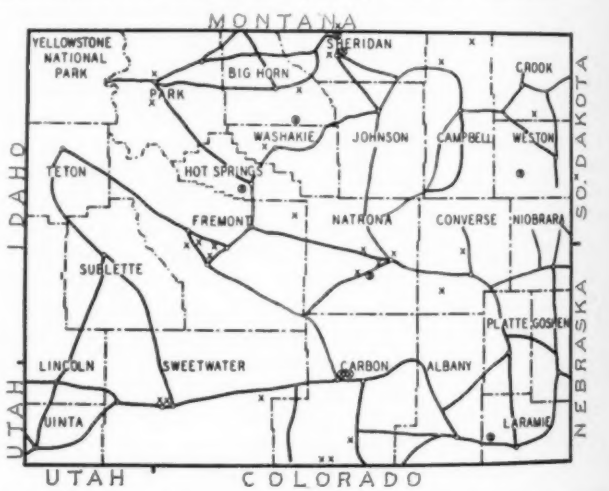

Fig. 8.—Cases and deaths from 1942 by sites of infection. There were 36 cases of Rocky Mountain spotted fever with 9 deaths. Two of the cases were out of state infections, 1 in Montana and 1 in South Dakota, but were reported and treated by Wyoming physicians. (Courtesy Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.)

themselves to insure recovery. Prognosis in the ultimate depends on the ability of infected persons to withstand ravages of the disease, particularly in reference to myocardial and renal intoxication. Bad omens are those of a confluent purpuric eruption, with terminal

6. Carey, L. S., and Duncan, G. G.: Rocky Mountain Spotted Fever in the East, J. A. M. A. **110**: 175 (Jan. 15) 1938. Clinical Notes: Insect Incendiaries, What's New **66**: 7, 1943. Hutton, J. G.: Rocky Mountain Spotted Fever, J. A. M. A. **117**: 413 (Aug. 9) 1941. Topping, N. H.: Rocky Mountain Spotted Fever: Treatment of Infected Laboratory Animals with Immune Rabbit Serum, Pub. Health Rep. **55**: 41 (Jan. 12) 1940. Baker.[4] Clinical Notes: Observations.[1] Parker: Rocky Mountain Spotted Fever.[2] Symposium: Rocky Mountain Spotted Fever.[5]

sloughing, definite temperature and pulse reactions, severe intoxication of the brain and central nervous system, and the development of complications, particularly in older or debilitated persons or those ill with intercurrent conditions.

In 1934 the late Dr. J. C. Kamp of Casper and I began original investigations on the use of neoarsphenamine dissolved in aqueous metaphen solution administered intravenously. We had previously received encouraging reports of responses obtained by use of the two drugs in combination for treatment of typhus fever. That year we used them in 9 moderately severe cases of tick fever without any deaths from the illness. Response was so gratifying that we decided to administer neoarsphenamine in metaphen in the future as a routine measure in all cases which came under our supervision.

Since that time an average of 3 to 4 cases of the disease have been under my care each season. During the past eight years all those so treated have recovered. Local physicians and ones practicing in other sections of the state have used the two drugs in combination as an adjunct to care for individuals seen by them. Those whom I have communicated with report equally gratifying responses, many of them joining in the firm conviction that neoarsphenamine in metaphen solution is a definite therapeutic aid in treatment of tick fever.

It is not thought that they exert a specific action on manifestations of the disease. Their approach is admittedly uncertain. Benefits derived from their use may be credited to direct action on rickettsias in the tissues. They can be attributable to a combination of the bactericidal action of metaphen together with the spirocheticidal action of neoarsphenamine on a microorganism which is bacterium-like in character yet has staining properties similar at least to those displayed by spirochetes. It is certain that those treated show less evidence of intoxication, minimal damage of the heart and kidneys and a more discrete, brighter colored eruption. The rash does not become hemorrhagic and is usually more sparse in distribution. There are less mental depression and milder nervous symptoms. In fact, the entire clinical picture is less alarming. Convalescence is more rapidly established, being of shorter duration with a minimum of complications. None of the patients had received tick vaccine for the purpose of immunization against the disease.

In the performance of the procedure 0.3 Gm. of neoarsphenamine is dissolved thoroughly in 10 cc. of an aqueous 1 : 1,000 metaphen solution. The resultant yellow and turbid mixture changes but little on standing. It is warmed and injected slowly by vein, the same precautions being observed as with any chemotherapeutic agent intended for intravenous administration. Solution is administered and blood alternately withdrawn into the syringe until the entire amount has been given. The procedure usually consumes a period of five to ten minutes. No reactions, local or constitutional, either immediate or delayed, have thus far been observed.

Administration of the two drugs is repeated at three to four day intervals. Three or four injections have customarily been sufficient to ameliorate the clinical picture so as to insure ultimate recovery. Continued or recurrent manifestations would apparently justify additional administration of neoarsphenamine in metaphen solution.

A word of warning appears indicated to those who might contemplate use of the two drugs in combination for treatment of tick fever. Should a case of the disease demonstrate severe renal injury as a result of the infection, careful consideration must then be given to the question as to whether or not their use is justified. The inherent risks associated with drugs of considerable potency on an already damaged kidney must be weighed against benefits to be derived from their administration. It has been my custom to secure first morning specimens of urine for examination on the day the material is to be given. These have never shown sufficient alterations to suggest severe renal disease. For that reason neoarsphenamine in metaphen solution has routinely been given at the time scheduled for its use.

Cases of Rocky Mountain Spotted Fever, Deaths and Fatality Rates for Wyoming, 1940 and 1941, 1942 and 1927 to 1942

	Cases, 1940 and 1941	Deaths, 1940 and 1941	Case Fatality Rates, 1940-1941	Cases, 1942	Deaths, 1942	Case Fatality Rates, 1942	Total Cases, 1927-1942	Total Deaths, 1927-1942	Case Fatality Rates, 1927-1942
Albany	1	0	....	0	0	....	16	4	25.0
Big Horn	6	0	....	2	1	50.0	59	13	22.0
Campbell	7	1	14.3	2	0	....	64	5	7.8
Carbon	11	3	27.3	5	2	40.0	62	21	33.9
Converse	11	2	18.2	2	0	....	48	8	16.7
Crook	7	0	....	1	0	....	30	2	6.6
Fremont	17	5	29.4	5	0	....	148	40	27.0
Goshen	1	0	....	0	0	....	2	0	....
Hot Springs	5	0	....	1	1	100.0	52	11	21.2
Johnson	10	1	10.0	0	0	....	71	6	8.5
Laramie	0	0	....	1	1	100.0	15	4	26.6
Lincoln	0	0	....	0	0	....	11	4	36.3
Natrona	22	3	13.6	5	1	20.0	144	29	20.0
Niobrara	7	0	....	0	0	....	25	1	4.0
Park	6	1	16.6	2	0	....	78	9	11.5
Platte	2	0	....	0	0	....	15	4	26.6
Sheridan	4	0	....	3	2	66.6	86	17	19.8
Sublette	0	0	....	0	0	....	0	0	....
Sweetwater	11	2	18.2	3	0	....	31	7	22.6
Teton	0	0	....	0	0	....	0	0	....
Uinta	2	0	....	0	0	....	6	0	....
Washakie	6	2	33.3	1	0	....	64	13	20.3
Weston	5	1	20.0	1	1	....	31	11	35.5
Montana	8	0	....	1	0	....	9	0	....
Colorado	1	0	....	0	0	....	1	0	....
Utah	1	0	....	0	0	....	1	0	....
South Dakota	0	0	....	1	0	....	1	0	....
	151	21	13.9	36	9	25.0	1,070	209	19.5

Beginning with 1940, all cases and deaths have been allocated to the county or adjoining state where the infection occurred. This gives a more accurate picture of the attack and fatality rates for each county and eliminates out of state infections. Prior to 1927 all cases were assigned to the counties reporting, regardless of the site of infection. (Courtesy of Dr. N. H. Savage, epidemiologist, Wyoming State Health Department.)

One Converse County 1941 death and one Weston County 1940 death occurred out of the state, but the infections occurred in Wyoming.

Detailed discussion of several cases of tick fever serves no useful purpose. The majority of them demonstrate clinical manifestations similar to what has been given in the preceding pages. A few have been selected for brief presentation, as they are sufficiently interesting or unusual to emphasize important features of the disease.

REPORT OF CASES

A middle aged rancher and his wife (J. D.), seen in February 1933, were ill with tick fever. Even though attached ticks were found on both patients at the time they were first examined and complete eruptions had occurred, we were at a loss to explain the source of infection. The weather was extremely cold and the ground covered by several inches of snow. Their residence was a single room house, heated by a base burner. Examination of a sheepskin coat which hung behind the stove revealed it to have several dormant wood ticks deeply hidden

in the wool lining. The coat had been worn the spring before by another person engaged in lambing activities. It had later been brought to town and discarded in the place where it was later found, being so old and worn out as to be nearly forgotten. It is assumed that artificial heat created by the stove had released tick vectors from hibernation in the coat. They had been aroused from a dormant state and had easily found human hosts. One patient was more ill than the other, but both recovered. It is assumed that an infected tick or ticks had in some manner been reactivated, in feeding on successive hosts or incubation by warmth from the base burner, either of which would have predisposed to increased virulence in vectors of the disease. As a result one of the infected persons was stricken with a severe type of tick fever.

R. S., a middle aged sheepherder, seen during May 1940, was ill with tick fever, moderately severe in type. The patient had been in Wyoming a month, coming to the state from Pennsylvania, where he had farmed for several years. Prior to becoming ill he had found numerous crawling and attached ticks on his person. They caused him no concern and were carelessly plucked off. On being advised as to the nature of his illness and the manner in which it had been contracted, the patient became most disgruntled, stating that ticks which attached to human beings were common in many sections of the state where he had formerly resided. They were not considered dangerous. To his knowledge no one had ever developed an illness simulating the one he was diagnosed as having. An attached wood tick was detected in the left axilla, deeply hidden by the hair. The tick was removed and shown to the patient. Following careful inspection of it he agreed that those with which he was familiar in Pennsylvania were not wood ticks but ones of another species. The patient made an uneventful recovery. Following discharge from the hospital he left immediately for home and never again returned to Wyoming.

O. W., a young housewife, reported for care in May 1941. Her complaints were those of headache and generalized malaise. An attached wood tick was found on the right shin. It was removed and symptomatic measures were instituted. Two days later she was seen again, at that time being quite ill. A beginning petechial eruption was noted on the wrists and ankles, the associated manifestations being those of moderately severe tick fever. The patient consistently denied having been in rural areas before the onset of her illness, stating that she had not left her home for a period of several weeks prior to becoming ill. Her husband was a fishing enthusiast. He had made several trips into tick infested localities, it being a custom for him to place his outing clothes on a line in the yard when returning home. It is believed that he had brought ticks to town with him. As the same line was used by the patient to hang the family washing, it is assumed that an infected tick had dropped to the grass beneath the line and had later attached itself to her. The husband of the patient had routinely been immunized against the disease each spring. She had refused vaccination, as fishing and outdoor activities did not interest her. For that reason she did not feel the precaution to be necessary.

S. F., an elderly rancher, was seen in May 1941 suffering from a moderately severe type of tick fever. Although a complete eruption was present at the time he was first seen, he stoutly maintained that he could not have the disease. He had ranched in the same locality for a period of forty-five years. Never having gotten tick fever, it was his assumption that he was immune to it. As serious manifestations from the illness developed rapidly, persuasion was not difficult. The prognosis was guarded because of his age and of a past history of chronic alcoholism. He developed a complicating bronchopneumonia but recovered following a prolonged and stormy illness. During its acute stages he was mentally confused and often irrational. A brother from whom he had been estranged for several years, realizing the seriousness of the patient's condition and believing him about to die, attempted to bring about an alteration in his will. Had his plan been successful the unscrupulous rascal would have inherited a large sum of money, leaving the patient's wife and children in a destitute state. Legal intervention prevented the misdeed. Following recovery and having no recollection of what had transpired, the patient was most disconcerted to learn that he had agreed to the unreasonable alteration. He was finally convinced that the confusional state existent during the acute stages of his illness was responsible for the errors in judgment shown by him at the time.

SUMMARY AND CONCLUSIONS

Rocky Mountain spotted fever (tick fever) is widespread in distribution throughout the country. It has possibilities for far greater dissemination, being a disease of serious potentialities. The clinical picture is fairly typical. There is a possibility of confusion with other disease states. Prevention of infection may be secured by simple precautions and the use of tick fever vaccine. Treatment is essentially symptomatic and supportive. Neoarsphenamine dissolved in aqueous metaphen solution has been used intravenously as an adjunct to treatment. Satisfactory results have been obtained in a number of cases so treated over a period of the past eight years. It is believed that the two drugs in combination exert a definite beneficial action on the course of moderately severe cases of the disease.

226 East Second Street.

HISTAMINE IN THE TREATMENT OF MÉNIÈRE'S SYNDROME

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TROY, N. Y.

This paper is concerned with the results obtained by the intravenous use of histamine phosphate in patients who are the victims of the symptom complex called Ménière's syndrome. As none of our patients came from a distance it was possible to follow the results obtained by each patient from the first day of treatment up to the present time. Since December 1940 we have treated 22 patients with Ménière's syndrome by means of histamine phosphate intravenously. Seventeen of these patients had striking results and at present all are well and going about their daily tasks. With 5 patients our results were disappointing. Only 1 of these 5 patients had had a major attack. These 5 patients have agreed to further study. Among our patients women predominated, and the ages varied from 40 to 76.

Ménière's syndrome is the name given to a group of symptoms in which vertigo, nerve deafness and tinnitus predominate. The nerve deafness may be either unilateral or bilateral and the loss of hearing is variable, ranging from slight diminution to total deafness. Most of the attacks of vertigo occur without previous warning and often are terrifying in their intensity. The attacks may be accompanied by nausea and vomiting. In most instances objects whirl about the patient or the patient rotates about the objects. He may fall suddenly to the ground or, if in bed, he grasps the sides, as he has the sensation of being thrown to the floor. However, the attacks of vertigo may occur without deafness or tinnitus. Some patients, indeed, have an ever present mild vertigo that in most instances has been preceded by major attacks.

It is generally accepted that the symptoms of Ménière's syndrome are the result of a local disturbance of the inner ear. Horton [1] believes that the most likely

Read before the Eastern New York Eye, Ear, Nose and Throat Association, Albany, N. Y., Oct. 1, 1942.

1. Horton, B. T.: The Use of Histamine in Ménière's Disease, Surg., Gynec. & Obst. 72: 417-420 (Feb. 15) 1941.

causative factor is local alteration in the permeability of the capillary wall of the labyrinth resulting in local edema. Dale proposed several years ago that, when the particular foreign substance to which man or animal is hypersensitive comes in contact with its specific antibody in the tissue cells, histamine is released. Histamine in turn causes smooth muscle spasm and localized edema which are the lesions of anaphylaxis and allergy.[2] It follows that the intravenous use of histamine results in desensitization and amelioration of the symptom complex.

In 1861 Ménière, a French physician, described the disease, and nothing as far as the symptoms are concerned has been added to his original observations. Ménière reported the history of a young woman who spent the night riding on top of a stagecoach exposed to a cold drizzling rain. She contracted a severe cold that was accompanied by persistent vertigo, deafness and vomiting, the vertigo and vomiting being aggravated by any movement of the body. After five days of illness the girl died. At necropsy a bloody exudate was found in the semicircular canals.

This was before Pasteur established the bacterial origin of disease, so Ménière incorrectly concluded that his patient's death was due to hemorrhage within the semicircular canals. We know now that the girl died of purulent labyrinthitis.

We can trace Ménière's syndrome back to antiquity. One of the best medical writers of the twelfth century was a Benedictine abbess, later canonized Saint Hildegarde. She considered vertigo as being caused by a congested condition of the brain. "When headache and vertigo attack a patient simultaneously," she observes, "they render a man foolish and upset his reason." Martin Luther, while an Augustinian monk, suffered from attacks. During his career as a reformer occurred the scene in which he threw the inkwell at the devil who was roaring in his ears. Dean Swift, the great satirist, also was afflicted and carefully recorded his own symptoms. Never a pleasant man, he turned violently sour the latter part of his life because of the frequency of the attacks and lived in seclusion. Beethoven was afflicted with bilateral nerve deafness. It is probable that the rages to which that great man was subjected were brought on by attacks of Ménière's syndrome. The first movement of the fifth symphony is highly suggestive. It is a matter for conjecture—the effect on that great genius if he had had a bilateral resection of the auditory nerve performed. Our own Gamaliel Bradford, noted for his character studies, was also afflicted. He described vividly his symptoms as "the swoop of the hawk."

Alexander of St. Louis was the first to report the intravenous use of histamine for chronic urticaria. Horton of the Mayo Clinic, encouraged by Alexander's success, treated a patient suffering from Ménière's syndrome with the intravenous use of histamine late in 1939.[1]

The technic for treating these patients is as follows: One cc. of histamine phosphate 2.75 mg. is diluted in 250 cc. of isotonic solution of sodium chloride. This is given drop by drop. In the beginning we gave 60 drops to the minute, and the time required for the treatment was about one and one-half hours. At the present time we are giving 70 drops to the minute. Two patients, however, could tolerate only 40 to 50 drops a minute. Many patients complain at first of constriction of the chest, and to be on the safe side in the beginning we never give more than 20 or 30 drops a minute for the first five minutes. Occipital headache is complained of quite early, but in a short time the pain leaves the occipital region and is confined to the frontal region. At first the face is flushed and within fifteen or twenty minutes the erythema spreads to the chest, the thighs and in some instances the soles of the feet and the toes. By the time the patient returns to his room, the flush has disappeared. The blood pressure is determined every ten minutes. With most patients there is a considerable variation.

CASE 1.—A woman aged 73, the first patient we treated, first seen by us in August 1940, had had several major attacks of Ménière's syndrome. Ammonium chloride and a salt free diet were advised. Five weeks after her visit she had two major attacks. She then summoned her family physician, who in turn called in a general surgeon. Her gallbladder was removed. Eight weeks after the gallbladder operation she suffered several major attacks. Following these attacks she consulted us again. She entered the Troy Hospital in December 1940. Histamine was given intravenously, and later several subcutaneous injections of 1 cc. of histamine phosphate 0.275 mg. were given at the office. She has been free from attacks ever since.

CASE 2.—An Italian woman aged 52 had a severe major attack of the syndrome at about 4 one morning in July 1941. The attack lasted several hours. She also had diabetes, which was controlled with insulin. After three weeks of dizzy spells and spending most of her time in bed she entered the hospital and was treated with histamine intravenously. She was given 1 cc. of histamine phosphate 0.0275 mg. subcutaneously twice a week for four weeks. She had had no return of Ménière's syndrome.

CASE 3.—A woman aged 62 had several major attacks of Ménière's syndrome in May 1941. The attacks lasted about four hours and the vomiting was severe. The attacks occurred in the early morning hours. She was given several subcutaneous injections of histamine without effect. Intravenous therapy was suggested but was not acceptable at this time.

The patient had a slight enlargement of the thyroid, and, as she had been advised several years before to have it removed, it was decided to have a thyroidectomy performed at the Albany Hospital. Three or four days before operation, and while at the hospital, she had a major attack of the syndrome. Oxygen was given over a period of several hours, but it was of no benefit. She was operated on and had no further attacks until she returned home. The attacks began and histamine was given subcutaneously. The vertigo was not controlled. We treated her intravenously at the Troy Hospital and she remained free from attacks for seven weeks. The attacks recurred and she returned to the hospital for intravenous therapy and remained free from attacks for three months. She then began to have some slight vertigo and after histamine was given subcutaneously all symptoms disappeared. When the attacks first occurred she weighed 108 pounds (49 Kg.). Today she weighs 120 pounds (54.4 Kg.) and has had no further attacks.

The following case is of interest from a medicolegal standpoint:

CASE 4.—In May 1941 a glazier was working on a scaffold in a new building. Through the carelessness of another workman he was knocked to the pavement, striking his head. The blow rendered him unconscious. He regained consciousness after several hours but had a constant vertigo, aggravated on movement. X-ray examinations for fracture of the skull were negative. He was discharged from the hospital after three weeks but was still dizzy and somewhat deaf.

We saw him almost three months after his accident. He had a staggering gait and had a tendency to lurch to the left, the side injured. He never left the house unless accompanied

2. Alexander, H. L.: Treatment of Allergic Disorders with Histamine and Histaminase, J. Lab. & Clin. Med. **26**: 110-116 (Oct.) 1940.

by his wife. We felt that the primary cause of his symptoms was a fracture through the petrous bone.

The lawyers for the insurance company refused settlement.

He entered the Troy Hospital on July 23, 1941 and was given histamine intravenously. He was considerably improved and could walk to the bathroom unaccompanied. He was given another intravenous injection a few days later.

He was given histamine subcutaneously and was symptom free for six weeks. A friend took him for a motor ride, and while walking from the car to the house he fell to the ground. He had a major attack that lasted about one-half hour. He was given another intravenous injection at the Troy Hospital. The subcutaneous injections were maintained for several weeks. Since early in September 1941 he has had no attacks.

In October, one month after he was free from any symptoms, his case was called. The lawyers who previously would not settle for any amount, reinforced by lawyers from New York, who evidently had done some reading on Ménière's syndrome, decided to settle with our patient before the case went before a jury. Our patient received $15,500.

The last 2 cases are presented for comparison because patient 5 for years has been allergic to extrinsic irritants and patient 6 at no time ever has had symptoms even remotely associated with a reaction from any extrinsic irritant.

Case 5.—A woman aged 62 was unable as a child to participate in winter sports because of a blanching and numbness of the hands and feet. In recent years she no longer had had involvement of the feet, the symptoms being confined to the fingers of both hands. She has always been careful not to place her hands in cold water because of the severe reaction. During the cold months she wore woolen gloves and carried a muff, but in spite of these precautions when she returned home she found it necessary to immerse the hands in warm water to restore the circulation. For hours afterward she could not hold a pencil or pen to write. For the past six years she has had attacks of erythema confined generally to the calves of the legs. There were present patches of variable size which caused intense itching. This symptom developed early in the fall and lasted until warm weather. She also was afflicted with vasomotor rhinitis and seasonal hay fever.

When the patient was 18 years of age a physician in Troy diagnosed her condition as Raynaud's disease, for which he was treating her father at the same time. Twenty-five years ago the patient noticed a slight unsteadiness in gait. Glasses were prescribed but they gave no relief. About ten years ago she became aware of tinnitus in the right ear and two years later noticed a loss of hearing in that ear. About six years ago the vertigo which had annoyed her for many years became aggravated, so much so that the patient's husband often found it necessary to accompany her when she went shopping.

In 1938 the patient had three major attacks of Ménière's syndrome accompanied by nausea and vomiting. The first attack lasted four hours and the other attacks about two hours each. After the major attacks the patient discovered that she could not walk a straight line. She had never been free from the sensation of light-headedness but now had a dread of being alone on the streets, especially at street crossings. After arising in the morning it was an hour or two before her equilibrium was restored enough so that she could go about her household duties. She consulted us three years ago because of the vertigo. Nerve deafness of the right ear was found. There was an annoying tinnitus of the right ear. Various forms of treatment that have been suggested during the past several years were tried, but little or no benefit was obtained. The patient was given histamine intravenously on March 18, 1941 at the Troy Hospital. For several weeks she was given a maintenance dose three times a week.

She remained symptom free until Dec. 16, 1942, when she had a very serious major attack that lasted several hours. She felt weak and quite unsteady after this attack. She was given an intravenous treatment of histamine on December 28. This was followed by histamine subcutaneously three times a week. She is no longer dizzy or unsteady and is going about her duties as well as ever. Her major attack was preceded by an almost unbearable roaring in her right ear. The roaring has stopped.

Case 6.—A woman aged 52 has had roaring noises in both ears for the past six years. At times she had attacks of vertigo. In November 1942 she began to have frequent attacks of vertigo, nausea and vomiting and was a patient in the hospitals of her city for complete examinations. She was advised to have a resection of the vestibular nerve. Her attacks grew more frequent and more severe. About every other day she would have two or three attacks of the syndrome, until she was near exhaustion.

When she entered the Troy Hospital on Jan. 1, 1943 she had no attacks, but about 8 a. m. on January 2 a major attack developed which was accompanied by a severe, spontaneous nystagmus to the left, directed to the more affected side.

When the intravenous treatment was begun the patient immediately had a flushing of the face. Most patients complain at first of occipital pain and a constriction of the chest, but this patient had neither. At first the nystagmus was exaggerated but in twenty minutes it had lessened. At no time did she have dryness of the nose and throat, a common complaint of our patients.

After thirty minutes of medication the flush left the face and body and the nystagmus was apparent only when the patient looked to the left. There was very little vertigo except when the patient turned her head to the left. When she left the operating room all symptoms had disappeared.

The next day the patient attempted to go to the bathroom unaccompanied and had to grasp the bed to save herself from falling. She had no symptoms after getting into bed and enjoyed her meals. On the following morning the patient was given another intravenous treatment. This time she reacted in the usual manner to intravenous therapy. The erythema of the face and body and other reactions were about the same as those described in the beginning of this paper. There was, however, very little variation in blood pressure. At the present time the patient is back at work and is free from all symptoms.

COMMENT

In the light of our experience with the last 2 patients in particular and with our other cases in general, we have come to the conclusion that one intravenous treatment for Ménière's syndrome is not sufficient. One should give at least two intravenous treatments and in some cases three on alternating days.

Horton,[1] to whom we are indebted for this new form of therapy, lays stress on the subcutaneous maintenance dose. Our experience, however, has placed considerable doubt as to the therapeutic value of the maintenance dose. It is possible that we shall get to rely on the intravenous therapy exclusively.

Alexander[2] conservatively states that "there have been no confirmatory reports regarding Horton's work."

It is hoped that this report may make some positive contribution to this new therapy for Ménière's syndrome.

CONCLUSIONS

We know that many patients with Ménière's syndrome get well without treatment. Some patients may have intervals of ten or twenty years between attacks. Various forms of treatment such as sedatives, ammonium chloride, salt free diet and catheterization of the eustachian tubes often help. On the other hand, the major attacks are terrifying, and the lesser symptoms such as the ever present giddiness and nausea are a physical and mental handicap to the otherwise healthy patient. If our diagnosis of Ménière's syndrome is correct, there is in histamine therapy the most promising method of treatment up to the present time.

17 Second Street.

THE 1942 SAN ANTONIO POLIOMYELITIS EPIDEMIC

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In the past eight years, epidemics of poliomyelitis have appeared in the South and Southeast for the first time, notably in the Carolinas, Florida, Alabama and Mississippi. With the exception of California, the states of the Southwest have generally escaped epidemics of any size and the state of Texas in particular has been relatively free of the disease. In 1916 there were only 63 cases reported in the entire state. In 1935 there were 78, in 1936 there were 65 cases, and in 1937 there were 637 cases, though these were widely scattered through the north central part of the state and were not numerous in the cities. In the next year, 1938, only 60 cases were reported and in 1940 there were 161 cases. The Texas cities have been comparatively free of the disease except for 58 cases observed in Fort Worth in 1927. San Antonio at no time has had over 10 cases in a single year.

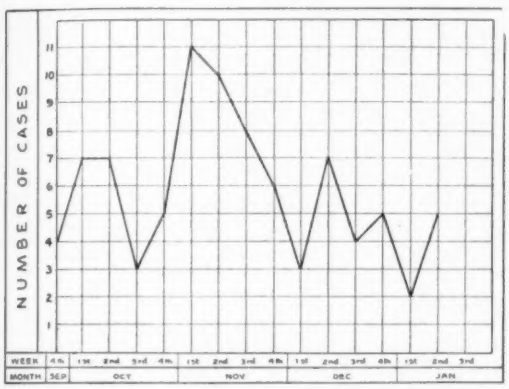

Chart 1.—Time of occurrence of acute cases of poliomyelitis in San Antonio during the 1942 epidemic.

In the fall of 1942, however, 87 cases of poliomyelitis were seen between Sept. 26, 1942 and Jan. 19, 1943 in persons who resided in the metropolitan area of San Antonio. An even more severe outbreak occurred simultaneously at Corpus Christi, 150 miles to the southeast. Before Sept. 26, 1942 only 2 sporadic cases had been observed in San Antonio during the entire summer "polio season." After Sept. 26, 1942 cases began to appear in the frequency shown in chart 1.

Reports of "winter epidemics" of poliomyelitis have been made in the past, but it must be borne in mind that San Antonio winters are mild and, as chart 2 shows, the fall and winter months of 1942 were quite warm. In October, November and December the daily temperatures ranged in the 80's and on only one night was the minimum temperature as low as 26 F. Consequently the period under consideration was climatically very similar to the northern late summer season.

San Antonio is normally a city of 260,000, but the present population with the large army and air force concentrations reaches well over 400,000. This more than 50 per cent rapid increase in population has thrown unusual demands on water supply systems, sewage disposal facilities, housing and all public health activities. This might of itself favor the outbreak of epidemic diseases and especially the so-called intestinal diseases.

Of the 87 patients with poliomyelitis there were 46 males and 41 females. They were divided among the racial groups as follows: Anglo-Americans, 63 cases; Mexicans, 20; Italians, 2; Negroes, 2. This corresponds roughly with the proportions of the various racial groups in the San Antonio population (1940 census: Anglo-Americans, 56 per cent; Mexicans, 34 per cent; Negroes, 7 per cent; Italians, 2 per cent).

TABLE 1.—*Ages of Patients with Poliomyelitis*

Under 1 year of age	6 cases
1- 5 years of age	46 cases
5-10 years of age	17 cases
10-15 years of age	5 cases
15-20 years of age	5 cases
20-25 years of age	6 cases
25-30 years of age	1 case
30-35 years of age	0 cases
35-40 years of age	1 case
Total	87 cases

The ages of the patients with poliomyelitis varied from eight months to thirty-eight years and were distributed as shown in table 1. As can be seen approximately 60 per cent of the patients were 5 years of age or less and nearly 80 per cent of the patients were less than 10 years of age.

The signs and symptoms which led to the diagnosis of poliomyelitis were fever, headache, stiff neck, stiff back and muscular weakness. Sixty-two of the patients were of the paralytic type and showed definite muscular weakness. The remaining 25 patients were "abortive" and showed no muscular weakness at the end of the acute state of the illness. With few exceptions we examined every patient in this group and numerous others who were poliomyelitis suspects; but in this statistical study we are including only those cases in which the diagnosis could be made with certainty. Routine spinal fluid examinations were not made in all cases because we felt that the diagnosis was sufficiently clear in many to eliminate the necessity for it. Moreover, in those cases in which stiffness of the back was pronounced we felt that the procedure was too painful for the little additional diagnostic advantage gained. Of the spinal fluid examinations which were made we found the usual increase in protein content and cell counts ranging from 10 to 220.

TABLE 2.—*Principal Paralyses of Sixty-Two Patients with Muscular Weakness*

Left leg	24 cases
Right leg	19 cases
Both legs	11 cases
Left arm and shoulder	10 cases
Right arm and shoulder	3 cases
Both arms	4 cases
Facial weakness	6 cases
Bulbar type paralysis	7 cases (6 deaths)

The principal paralyses of the 62 paralytic patients who presented muscular weakness as a prominent symptom are given in table 2. Of course, the pattern

of paralysis was exceedingly varied and some patients showed several extremities involved, which explains the discrepancy between the number of patients and the number of paralyzed extremities. As is generally true, nearly all the patients with bulbar paralysis died despite the use of the respirator and other supportive measures. Two patients showed the polyneuritic type of poliomyelitis in which there was severe pain and tenderness of the legs which persisted for many weeks.

As soon as it became apparent that many acute cases of poliomyelitis were developing, the Robert B. Green (City-County) Hospital established a poliomyelitis ward and an isolation unit. Physical therapy technicians specially trained in the Kenny method of treatment were secured through the local chapter of the National Foundation for Infantile Paralysis and the Texas State Crippled Children's Bureau. During the time of the outbreak, 39 cases were treated in the hospital by the Kenny trained physical therapists. In other words, all patients who showed any muscle tenderness or weakness, stiffness of the back or hypertonicity of muscles were given the treatment as outlined by the Minneapolis group. Moreover, intensive treatment was abandoned only when all muscle hyperirritability and pain were overcome.

As a measure for retarding spread of the epidemic we advised the families of patients to fill the house where the patient lived with insect spray and to repeat it before the quarantine was lifted. It was recommended that other children who lived in the house or nearby should have oil of citronella applied to exposed skin surfaces when playing outdoors or when in public places. While patients were in the hospital and for two months after going home, a tablespoon of phenol was placed in bowel movements (in bedpans) and allowed to remain fifteen minutes before emptying in the toilet.

On Jan. 21, 1943 we reexamined all the patients and collected reports on every one who had had acute poliomyelitis to determine the extent of their recovery up to that time. Thirty patients were free from all effects

TABLE 3.—*After Effects*

Completely recovered	30 cases
Slight residual weakness	16 cases
Moderate residual weakness	12 cases
Severe residual weakness	17 cases
Died	6 cases
Results unknown	6 cases
Total	87 cases

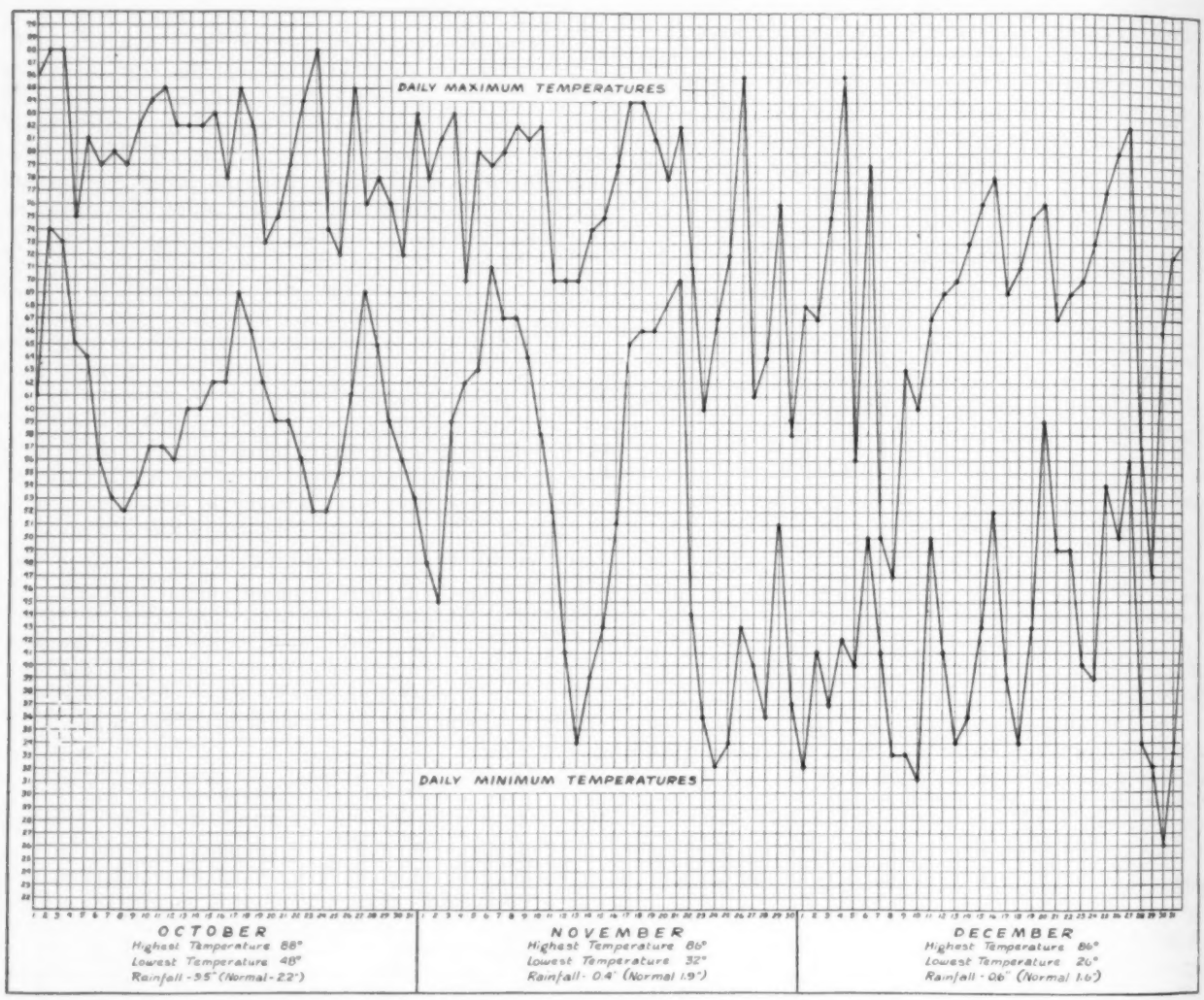

Chart 2.—Daily maximum and minimum temperatures in San Antonio, October-December 1942. Prepared from United States Weather Bureau statistics.

of the disease with no muscle weakness or residual hypertonicity of any muscle groups. These included the 25 cases which were considered to be abortive or which showed only slight temporary muscular weakness. The results of the examinations made immediately after the epidemic are given in table 3. At the time of reexamination there were no joint deformities or muscle contractures in those patients who had been treated by the Kenny method. Two who had refused treatment showed considerable muscle contracture and beginning deformity. Also none of these patients had developed definite sympathetic changes (discoloration, cold clammy skin and extensive atrophy) in the involved extremities.

As stated before, there was a relatively severe outbreak of poliomyelitis in Corpus Christi, Texas, during the time of the San Antonio epidemic and we saw 15 patients with poliomyelitis who resided in towns adjacent to San Antonio that are not included in this series.

Through the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Dr. John R. Paul, professor of preventive medicine in the Yale University School of Medicine and director of the Commission on Neurotropic Virus Diseases, was sent to San Antonio in December 1942 to study the course of this epidemic. In his report to the Surgeon General's Office these epidemiologic observations were made:

In keeping with the experience of other southern epidemics which have occurred since 1938 the age group in the San Antonio cases was lower than the average age group in northern epidemics.

Several cases occurred in children who had just recently moved to San Antonio, and in 1 instance the child had been in the city only five days before developing the disease.

From stool specimens of the San Antonio patients a typical strain of the poliomyelitis virus was isolated.

Sewage and sludge samples collected at the city sewage disposal plant were negative for evidence of the poliomyelitis virus.

From flies collected in homes of patients with poliomyelitis, a strain of poliomyelitis virus was isolated.

SUMMARY

1. The 1942 poliomyelitis epidemic in San Antonio has been studied by our personal observation of all the patients who were known to have the disease.

2. The 87 patients were with few exceptions treated by the Kenny method and a follow-up examination revealed more rapid recoveries than usual among those who were not severely paralyzed at the onset. Observations indicate that there will be less residual deformity among these patients than is usually observed.

3. The 1942 epidemic in San Antonio occurred principally in October, November and December, whereas the normal peak months of epidemics elsewhere are June, July and August.

4. The age incidence of the patients in this epidemic was lower than is usual in northern epidemics but was in keeping with experience during other outbreaks in the South.

5. Careful epidemiologic studies were made in San Antonio during the epidemic by Dr. John R. Paul and the findings were reported.

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BACTERIAL CONTAMINATIONS IN SULFONAMIDE OINTMENTS

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That sulfonamide compounds in themselves are bacteriostatic rather than bactericidal agents in vitro is an established fact.[1] The rapidly growing medical use of sulfonamide powders, ointments and solutions for topical application in superficial and deep wounds raises the question of the possibility of their becoming contaminated with pathogenic organisms not affected by the drugs.

TABLE 1.—*Agar Cup Plates, Staphylococcus Aureus No. 209*

Sulfonamide	Antiseptic Added	Zone of Inhibition, Mm.	
		Complete	Partial
Sulfathiazole 5%	0	0	10
Sulfathiazole 10%	0	0	10
Sulfathiazole 5%	Amylphenol 0.5%	0	10
Sulfathiazole 5%	Oxyquinoline benzoate 0.1%	5	10
Sulfathiazole 5%	Oxyquinoline sulfate 0.1%	3	10
Sulfathiazole 5%	Chlorobutanol 1%	0	9
Sulfathiazole 5%	Urea borate 1%	0	5
Sulfathiazole 5%	Chlorthymol 0.05%	0	10
Sulfathiazole 5%	Sodium benzoate 0.1%	0	9
Sulfathiazole 5%	Boric acid 1%	0	5
Sulfathiazole 5%	Urea peroxide 1%	15-17	0
Sulfathiazole 5%	Urea peroxide 0.5%	15-17	0
Sulfathiazole 5%	Urea peroxide 0.25%	13	0
Sulfathiazole 5%	Urea peroxide 0.1%	8	10
Sulfathiazole 5%	Sodium perborate 0.1%	7	10
Sulfathiazole 5%	Calcium peroxide 0.1%	0	10
Sulfathiazole 5%	Potassium permanganate 0.1%	0	10
Sulfathiazole 5%	Benzoyl peroxide 0.1%	0	10
Sulfathiazole 5%	Benzoyl peroxide 1.0%	0	10
Sulfathiazole 5%	Zinc peroxide 0.1%	0	10
Sulfathiazole 5%	Zinc peroxide 1.0%	4	10
Sulfanilamide 5%	0	0	7
Sulfanilamide 5%	Sodium perborate 0.1%	7	0
Sulfanilamide 5%	Calcium peroxide 0.1%	0	10
Sulfanilamide 5%	Magnesium peroxide 0.1%	5	10
Sulfanilamide 5%	Urea peroxide 0.1%	0	7
Sulfanilamide 5%	Urea peroxide 1.0%	15	0
Sulfanilamide 5%	Potassium permanganate 0.1%	0	7
Sulfanilamide 5%	Zinc peroxide 0.1%	0	7
Sulfanilamide 5%	Zinc peroxide 1.0%	1	7
Sulfanilamide 5%	Benzoyl peroxide 0.1%	0	6
Sulfanilamide 5%	Benzoyl peroxide 1.0%	0	7
Sulfadiazine 5%	0	0	4
Sulfadiazine 5%	Sodium perborate 0.1%	10	0
Sulfadiazine 5%	Calcium peroxide 0.1%	0	2
Sulfadiazine 5%	Magnesium peroxide 0.1%	4	0
Sulfadiazine 5%	Potassium permanganate 0.1%	0	0
Sulfadiazine 5%	Urea peroxide 0.1%	6	0
Sulfadiazine 5%	Urea peroxide 1.0%	10	0
Sulfadiazine 5%	Benzoyl peroxide 0.1%	0	3
Sulfadiazine 5%	Benzoyl peroxide 1.0%	0	3
Sulfadiazine 5%	Zinc peroxide 0.1%	0	0
Sulfadiazine 5%	Zinc peroxide 1.0%	0	3

Recent findings have shown some products so contaminated. Our experiments have led us to believe that serious contaminations do occur. Welch, Slocum and Herwick [2] have emphasized the necessity for sterilization of sulfonamide dusting powders since these powders were incapable of killing tetanus spores with which they were contaminated. Recently a report [3] has come from

From the Warner Institute for Therapeutic Research.

Read at the third session of the Laboratory Section of the seventy-first annual meeting of the American Public Health Association, Oct. 28, 1942.

1. Long, P. H., and Bliss, Eleanor A.: The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds, New York, Macmillan Company, 1939. Neter, Erwin: Action of Sulfanilamide on Hemolytic Streptococci, Lancefield Types A and D in Growth Promoting and Non-Growth Promoting Mediums, J. Infect. Dis. **68**: 278-284 (May-June) 1941.

2. Welch, Henry; Slocum, G. G., and Herwick, R. P.: Tetanus from Sulfonamide Dusting Powders, J. A. M. A. **120**: 361-364 (Oct. 3) 1942.

3. Tetanus After Local Chemotherapy, annotation, Lancet **1**: 770 (June 27) 1942.

England of the death of a patient from tetanus following the postoperative use of powdered sulfapyradine in the abdomen.

Experiments using the agar cup plate test [4] indicate that ointments prepared in a water dispersible base [5] with 5 per cent sulfanilamide, sulfathiazole or sulfadiazine

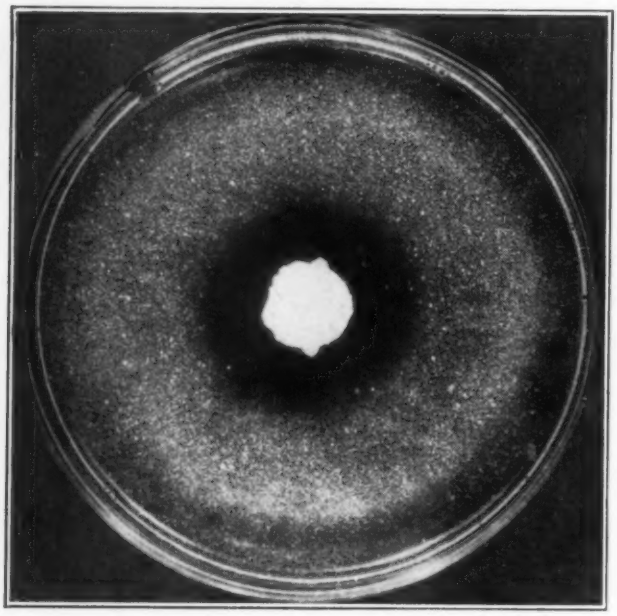

Fig. 1.—Zone of inhibition, Staphylococcus aureus and 5 per cent sulfathiazole.

produce only zones of partial inhibition when Staphylococcus aureus is used as the test organism (fig. 1). In table 1 are shown the results in vitro of adding

TABLE 2.—*Effect of Aging at 37 C. for Three Months, Agar Cup Plates, Staphylococcus Aureus No. 209*

		Zone of Inhibition, Mm.			
		Freshly Prepared		After Aging	
Sulfonamide	Oxidizing Agent	Complete	Partial	Complete	Partial
Sulfathiazole 5%	Urea peroxide 1.0%.....	15-17	0	15	0
Sulfathiazole 5%	Urea peroxide 0.5%.....	15-17	0	12	0
Sulfathiazole 5%	Urea peroxide 0.25%.....	13	0	8	0
Sulfathiazole 5%	Urea peroxide 0.1%.....	8	10	2	8
Sulfanilamide 5%	Zinc peroxide 1.0%.....	1	7	9	0
Sulfadiazine 5%	Benzoyl peroxide 1.0%...	0	3	10	0

various antiseptics to the 5 per cent ointments to supply the lacking bactericidal properties (fig. 2).

Clinical and experimental studies have demonstrated the effectiveness of treating wounds with zinc peroxide in combination with sulfonamides [6] or with zinc peroxide alone.[7] Benzoyl peroxide [8] has also been recommended. The use of urea to increase the rapidity of wound healing has been advocated.[9]

Oxidizing agents seemed to offer promising possibilities for increasing the bactericidal activity of the sulfonamide ointments in vitro. Further studies were conducted therefore with benzoyl peroxide, urea-hydrogen peroxide (hereinafter referred to as urea peroxide) and zinc peroxide.

TABLE 3.—*Contamination of Sulfonamide Ointments with Staphylococcus Aureus*

	Period of Contact							
Sulfonamide with Oxidizing Agent	1 Hr.	2 Hr.	4 Hr.	6 Hr.	8 Hr.	18 Hr.	24 Hr.	48 Hr.
Sulfathiazole 5%.....	+	+	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—
Sulfathiazole 5% with urea peroxide 1%....	+	—	—	—	—	—	—	—
Sulfathiazole 5% with zinc peroxide 1%.....	+	+	+	+	+	+	+	+
Sulfadiazine 5%.....	+	+	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—
Sulfadiazine 5% with urea peroxide 1%....	+	+	—	—	—	—	—	—
Sulfadiazine 5% with zinc peroxide 1%.....	+	+	+	+	+	+	+	+
Sulfanilamide 5%.....	+	+	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	—	—	—	—	—	—	—
Sulfanilamide 5% with urea peroxide 1%....	+	+	—	—	—	—	—	—
Sulfanilamide 5% with zinc peroxide 1%.....	+	+	+	+	+	+	+	+

In the tables + indicates growth.

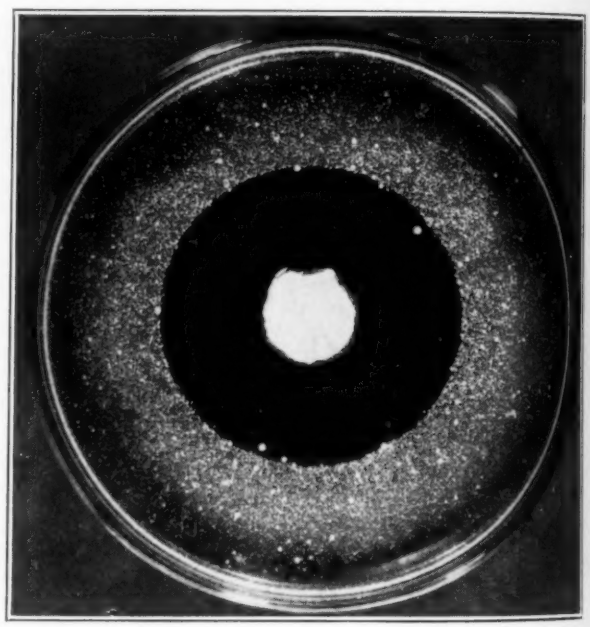

Fig. 2.—Zone of inhibition, Staphylococcus aureus and 5 per cent sulfathiazole with 1 per cent urea peroxide.

The release of oxygen from ointments prepared in a water dispersible base might reduce considerably the efficiency of these sulfonamide preparations. Aging of

4. Methods of Testing Antiseptics and Disinfectants, circular 198, Dept. of Agric., U. S. Food and Drug Administration.

5. The water dispersible base in which the various sulfonamides were suspended consisted of diglycol stearate, light mineral oil, cetyl alcohol, anhydrous wool fat, white petrolatum and 65 per cent water.

6. Meleney, F. L., and Harvey, H. D.: The Combined Use of Zinc Peroxide and Sulfanilamide in the Treatment of Chronic, Undermining, Burrowing Ulcers Due to the Microaerophilic Streptococcus, Ann. Surg. **110:** 1067-1094 (Dec.) 1939. Goldberger, H. A.: The Potentiation of the Sulfonamides in the Local Therapy of Wounds and Surgical Infections by the Use of Oxidants, Am. J. Surg. **56:** 353-374 (May) 1942.

7. Meleney, F. L.: The Important Anaerobic Infections and the Use of Zinc Peroxide in Their Control, U. S. Nav. M. Bull. **40:** 53-64 (Jan.) 1942. Reed, G. B., and Orr, J. H.: Treatment of Experimental Gas Gangrene with Zinc Peroxide, War Med. **2:** 79-82 (Jan.) 1942.

8. Leak, C. D.: Advantages of Benzoyl Peroxide Over Zinc Peroxide or Sulfonamides in Treating Wounds or Burns, J. A. M. A. **119:** 101 (May 2) 1942.

9. Holder, H. G., and MacKay, E. M.: The Use of Urea in the Treatment of Infected Wounds, J. A. M. A. **108:** 1167-1169 (April 3) 1937; Wound Therapy, Mil. Surgeon **90:** 509-518 (May) 1942; The Application of Carbamide (Urea) Therapy in Wound Healing, Ann. Surg. **110:** 94-99 (July) 1939. Olson, Magnus; Slider, Ethel; Clark, W. G., and MacDonald, Roger: Effect of Urea in Sulfonamide Base on Healing of Clean Skin Wounds in Rabbits, Proc. Soc. Exper. Biol. & Med. **49:** 396-399 (March) 1942. Tsuchiya, H. T.; Tenenberg, D. J.; Clark, W. G., and Strakosch, E. A.: Antagonism of Antisulfonamide Effect of Methionine and Enhancement of Bacteriostatic Action of Sulfonamide by Urea, ibid. **50:** 262-266 (June) 1942.

the ointments at 37 C. for three months showed little drop in antiseptic activity of the sulfathiazole ointments containing 0.25, 0.5 and 1.0 per cent urea peroxide. The in vitro activity of sulfadiazine with benzoyl peroxide and sulfanilamide with zinc peroxide were improved under the same conditions (table 2).

In order to determine the self-sterilizing properties of (*a*) ointments of the sulfonamides alone and (*b*) ointments of the sulfonamides in combination with the various oxidizing agents, the following test was devised: Four Gm. of the ointments was weighed into sterile glass jars, and 1 cc. of a twenty hour broth culture of the desired test organism was thoroughly mixed with the ointment. Subcultures consisting of a 4 mm. loopful of the ointment-organism mixture into nutrient or defibrinated blood broth mediums were taken at the time intervals indicated in the accompanying tables. In all instances, presence or absence of growth was checked after twenty-four hours incubation at 37 C. of the original subcultures, by smear, or by plating on nutrient or blood agar plates. Tables 3, 4 and 5 show the results obtained when the ointments were contaminated with Staphylococcus aureus No. 209, Streptococcus hemolyticus C-203 and Escherichia coli (acidi lactici strain).

TABLE 4.—*Contamination of Sulfonamide Ointments with Streptococcus Hemolyticus*

Sulfonamide with Oxidizing Agent	Period of Contact: 10 Min.	15 Min.	20 Min.	25 Min.	30 Min.	1 Hr.	1½ Hr.	2 Hr.
Sulfathiazole 5%	+	+	+	+	+	—	—	—
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+	—	—	—
Sulfathiazole 5% with urea peroxide 1%	+	+	+	+	+	—	—	—
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	—	—	—	—
Sulfadiazine 5% with urea peroxide 1%	+	+	+	+	—	—	—	—
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+	—	—	—
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	—	—	—	—	—
Sulfanilamide 5% with urea peroxide 1%	+	+	+	+	+	—	—	—
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	—	—	—

TABLE 5.—*Contamination of Sulfonamide Ointments with Escherichia Coli*

Sulfonamide with Oxidizing Agent	Period of Contact: 1 Hr.	2 Hr.	3 Hr.	4 Hr.	5 Hr.	7 Hr.	18 Hr.	24 Hr.
Sulfathiazole 5%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfathiazole 5% with urea peroxide 1%	+	—	—	—	—	—	—	—
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	+	+	+	+	+
Sulfadiazine 5% with urea peroxide 1%	+	+	—	—	—	—	—	—
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+
Sulfanilamide 5%	+	+	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	+	+	+	+	—	—
Sulfanilamide 5% with urea peroxide 1%	+	+	+	—	—	—	—	—
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	+	+	+	+

Clostridium tetani (Lister strain)[10] and Clostridium perfringens (Barber strain)[10] were selected to determine the ability of these ointments to reestablish sterility when contaminated with anaerobic spore forming organisms. A spore suspension of Cl. tetani was prepared according to the method of Bliss, Long and Smith.[11]

TABLE 6.—*Contamination of Sulfonamide Ointments with Clostridium Tetani (Lister Strain)*

Sulfonamide with Oxidizing Agent	Period of Contact: 1 Hr.	3 Hr.	5 Hr.	7 Hr.	8 Hr.	24 Hr.
Sulfathiazole 5%	+	+	+	+	+	+
Sulfathiazole 5% with benzoyl peroxide 1%	+	+	+	—	—	—
Sulfathiazole 5% with urea peroxide 1%	+	—	—	—	—	—
Sulfathiazole 5% with zinc peroxide 1%	+	+	+	+	+	+
Sulfadiazine 5%	+	+	+	+	—	—
Sulfadiazine 5% with benzoyl peroxide 1%	+	+	+	—	—	—
Sulfadiazine 5% with urea peroxide 1%	+	—	—	—	—	—
Sulfadiazine 5% with zinc peroxide 1%	+	+	+	+	—	—
Sulfanilamide 5%	+	+	+	+	+	+
Sulfanilamide 5% with benzoyl peroxide 1%	+	+	—	—	—	—
Sulfanilamide 5% with urea peroxide 1%	+	—	—	—	—	—
Sulfanilamide 5% with zinc peroxide 1%	+	+	+	+	—	—

TABLE 7.—*Animals Injected with Sulfonamide Ointments Contaminated with Clostridium Tetani*

Sulfonamide with Oxidizing Agent	Total No. of Guinea Pigs Injected	Deaths by Days: 1	2	3	4	5	6	7	Deaths: Total	Percentage
Sulfathiazole 5%	12	0	6	5	1	0	0	0	12	100.0
Sulfathiazole 5% with benzoyl peroxide 1%	6	0	0	0	1	0	1	2	4	66.6
Sulfathiazole 5% with urea peroxide 1%	12	0	0	0	1	0	0	0	1	8.3
Sulfathiazole 5% with zinc peroxide 1%	12	0	0	2	3	1	2	0	8	66.6
Sulfadiazine 5%	12	0	7	5	0	0	0	0	12	100.0
Sulfadiazine 5% with benzoyl peroxide 1%	6	0	0	1	0	0	0	0	1	16.6
Sulfadiazine 5% with urea peroxide 1%	12	0	0	0	0	0	1	1	2	16.6
Sulfadiazine 5% with zinc peroxide 1%	12	0	0	6	0	0	0	0	6	50.0
Sulfanilamide 5%	12	0	8	4	0	0	0	0	12	100.0
Sulfanilamide 5% with benzoyl peroxide 1%	6	0	0	6	0	0	0	0	6	100.0
Sulfanilamide 5% with urea peroxide 1%	12	0	1	0	0	0	0	0	1	8.3
Sulfanilamide 5% with zinc peroxide 1%	6	0	2	3	1	0	0	0	6	100.0
Control	12	0	10	1	1	..	..	..	12	100.0

TABLE 8.—*Contamination of Sulfonamide Ointments with Clostridium Welchi (Barber Strain)*

Sulfonamide with Oxidizing Agent	Period of Contact: 1 Hr.	3 Hr.	5 Hr.	7 Hr.	24 Hr.
Sulfathiazole 5%	+	+	—	—	—
Sulfathiazole 5% with benzoyl peroxide 1%	+	—	—	—	—
Sulfathiazole 5% with urea peroxide 1%	—	—	—	—	—
Sulfathiazole 5% with zinc peroxide 1%	+	—	—	—	—
Sulfadiazine 5%	+	+	—	—	—
Sulfadiazine 5% with benzoyl peroxide 1%	+	—	—	—	—
Sulfadiazine 5% with urea peroxide 1%	—	—	—	—	—
Sulfadiazine 5% with zinc peroxide 1%	+	—	—	—	—
Sulfanilamide 5%	+	+	—	—	—
Sulfanilamide 5% with benzoyl peroxide 1%	+	—	—	—	—
Sulfanilamide 5% with urea peroxide 1%	—	—	—	—	—
Sulfanilamide 5% with zinc peroxide 1%	+	—	—	—	—

10. Cultures were obtained through the courtesy of Dr. John C. Torrey, Cornell Medical College, New York City.

11. Bliss, Eleanor A.; Long, P. H., and Smith, Dorothy G.: Chemotherapy of Experimental Gas Gangrene and Tetanus Infections of Mice, War Med. **1**: 799-810 (Nov.) 1941.

One cc. of the spore suspension was mixed with 4 Gm. of the ointment, and subcultures into thioglycolate mediums were made as described for Staphylococcus, Streptococcus and E. coli. The subcultures were incubated for forty-eight hours and growth was checked by smears. Table 6 presents the results of these tests.

To test further the cultural and tinctorial findings, the contaminated ointments were injected into guinea pigs. Serial dilutions of the spore suspension were made. Injections of these into guinea pigs showed that a 1 : 10 dilution of the suspension was equivalent to approximately 10 minimum lethal doses. Four Gm. of the ointments was weighed out and thoroughly mixed with 1 cc. of the undiluted spore suspension. After being allowed to stand for twenty-four hours, the ointment-spore suspension mixtures were mixed with 5 cc. of a sterile 5 per cent calcium chloride solution, making the final dilution of the spore suspension 1 : 10. Five-tenths cc. of the resultant mixture was injected into the right hind leg muscle of guinea pigs weighing from 250 to 275 Gm. (table 8).

Three strains of Clostridium perfringens (type I, type II and Barber) which were studied did not sporulate readily. Further studies of this organism were made with vegetative forms grown for twenty hours in thioglycolate mediums, centrifuged, washed and resuspended in 2.5 per cent calcium chloride solution. The minimum lethal dose for the Barber strain was determined to be approximately the same as for Clostridium tetani, so further experiments were limited to that strain. Subsequent studies were carried out as described for tetanus. Results are shown in tables 8 and 9.

TABLE 9.—*Animals Injected with Sulfonamide Ointments Contaminated with Clostridium Perfringens*

Sulfonamide with Oxidizing Agent	Total No. of Guinea Pigs Injected	Deaths by Days							Deaths	
		1	2	3	4	5	6	7	Total	Percentage
Sulfathiazole 5%.....	5	0	0	0	0	0	0	1	1	20.0
Sulfathiazole 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfathiazole 5% with urea peroxide 1%.....	5*	0	0	0	0	0	0	0	0	0
Sulfathiazole 5% with zinc peroxide 1%.....	5	0	0	0	1	0	0	1	2	40.0
Sulfadiazine 5%.....	5	0	0	0	0	0	1	0	1	20.0
Sulfadiazine 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	0	0	0
Sulfadiazine 5% with urea peroxide 1%.....	5	0	1	0	0	0	0	1	2	40.0
Sulfadiazine 5% with zinc peroxide 1%.....	5	0	0	0	0	0	0	0	0	0
Sulfanilamide 5%.....	5	0	0	0	0	0	0	2	2	40.0
Sulfanilamide 5% with benzoyl peroxide 1%	5	0	0	0	0	0	0	2	2	40.0
Sulfanilamide 5% with urea peroxide 1%.....	5	0	0	0	0	0	0	0	0	0
Sulfanilamide 5% with zinc peroxide 1%.....	5	0	2	0	0	0	0	0	2	40.0
Control.....	5	4	1	..	..	..	..	..	5	100.0

SUMMARY AND CONCLUSIONS

1. Five per cent sulfanilamide, sulfathiazole or sulfadiazine ointments in a water dispersible base may become contaminated with disease producing organisms which these sulfonamides are not capable of killing.

2. Addition of small amounts of other chemicals, particularly certain oxidizing agents, strongly increases the self-sterilizing properties of these ointments. Of those studied, the most practical and generally effective agent to insure safety and therapeutic performance appears to be urea peroxide in up to 1 per cent concentration. Higher concentrations increase the irritant properties to an objectionable degree for certain uses.

3. These findings emphasize the importance of care in the manufacture of sulfonamide products intended for topical application. The addition of an antiseptic to enhance the bactericidal properties and insure sterility of sulfonamide ointments is indicated to be essential as a factor of safety.

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POSTERIOR HERNIA OF THE KNEE

(BAKER'S CYST, POPLITEAL CYST, SEMIMEMBRANOSUS BURSITIS, MEDIAL GASTROCNEMIUS BURSITIS AND POPLITEAL BURSITIS)

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The differential diagnosis of benign and malignant popliteal tumors, aneurysms, varicosities, bursae and posterior perforations of the synovia of the knee joint frequently taxes the ability of the physician. This paper is based on a series of 15 cases in which popliteal cysts produced firm fixed masses and, in some instances, limitation of flexion of the knee and swelling in the popliteal space. Surgical intervention revealed that each of these cysts was connected directly with the knee joint through an opening in the posterior part of the capsule, usually along the lateral side of the medial condyle of the femur. We believe that these cysts are the result of (1) herniation of the synovial membrane through the posterior part of the capsule or (2) the escape of fluid through the normal anatomic connections of the knee joint into the bursae; that is, into the medial gastrocnemius or semimembranosus bursae. In this study we have considered Baker's cyst as an endothelial lined cyst which appears in the popliteal space and is connected with the joint.

Since in 1877, when Baker [1] published an article on synovial cysts of the knee, his name has been associated with these cysts. In 1840 Adams,[2] described cystic swellings associated with chronic rheumatic arthritis of the knee. Gruber,[3] who later became professor of anatomy at the university in St. Petersburg, described posterior hernia of the joint in 1845 and later distinguished it clearly from enlarged popliteal bursae not connected with the joint. In the experience of Baker [4] and others, in the days of laudable pus, surgical intervention on the cysts frequently resulted in septic arthritis and amputation, but with the development of aseptic technic infection became rare and amputation seldom became necessary. The value of injection of air into

From the Section of Orthopedic Surgery, Mayo Clinic.

1. Baker, W. M.: The Formation of Synovial Cysts in the Leg in Connection with Disease of the Knee Joint, St. Barth. Hosp. Rep. **13:** 245-261, 1877.

2. Adams, quoted by Wilson.[7]

3. Gruber, Wenzel: Hygrom von enormer Grosse an der Bursa genu mucosa retro-condyloidea interna, Virchows Arch. f. path. Anat. **99:** 489-492 (March) 1885.

4. Baker, W. M.: The Formation of Abnormal Synovial Cysts in Connection with Joints (Second Communication), St. Barth. Hosp. Rep. **21:** 177-190, 1885.

the knee in making the diagnosis of Baker's cyst before operation was clearly demonstrated by Cravener [5] in 1932. In 1938 Haggart [6] reported several cases of posterior hernia of the knee and Wilson and his associates [7] reported a number of cases of popliteal bursae connected with the joint.

ETIOLOGIC CONSIDERATIONS

Certain anatomic factors at the knee predispose to posterior hernia. At operation it has been noticed that the capsule is weak along the lateral side of the medial condyle of the femur. Each of the most important bursae of the popliteal space, that is, the semimembranosus, the semitendinosus, the popliteus and the gastrocnemius bursae (fig. 1), may communicate with the joint as well as with one another under certain conditions. Synovial diverticula may herniate through the fibers of the oblique posterior ligament.[8] The communications of these various structures with the joint are in many instances open when the knee is extended and the posterior part of the capsule tense but tend to close with flexion of the knee. Herniation and escape of synovial fluid into these structures thus increase with motion, and therefore the cyst enlarges. In the case of bursae, Wilson and his associates expressed the belief that the overlying muscles close the articular communication of the underlying bursae and distention of the bursae results. Because of the anatomic factors just mentioned we feel that trauma is not an etiologic factor. Rheumatoid arthritis and osteoarthritis have been reported in association with posterior hernia of the knee, and in 7 of our 15 cases rheumatoid and osteoarthritis were associated. The effusion associated with arthritis may perhaps have been of etiologic significance.

THE HERNIAL SAC

The hernial sacs are frequently 8 to 10 cm. in length and 5 to 7.5 cm. in width. When they enlarge they follow the path of least resistance and may extend downward as far as the achilles tendon as described by Boyd.[9] The hernial sac is attached to the joint by a pedicle, which may become firm and thick and attain a length of 1 to 1.5 cm. and also may be densely adherent to the tendons, particularly the gastrocnemius. These bursa-like sacs may be multilocular and contain yellow tinged mucilaginous fluid, which may be either clear or clouded with fibrin. In severe popliteal injuries, hemorrhage may occur into the sac or hemarthrosis may result. Occasionally an injury will cause rupture of the cyst; the surrounding structures then form the new wall of the hernial sac.

Microscopic examination of the intact hernial sac reveals an inner layer of endothelium, a subendothelial layer of definite infiltration of round cells and an outer layer of fibrous tissue which measures from 1 mm. to as much as 1 cm. in thickness at the pedicle and narrows distally. This outer layer contains dilated blood vessels. Hyaline and fibrocartilaginous metaplasia and hemosiderin may be present (figs. 2 and 3).

5. Cravener, E. K.: Hernia of the Knee Joint (Baker's Cyst), J. Bone & Joint Surg. **14**: 186-187 (Jan.) 1932.

6. Haggart, G. E.: Posterior Hernia of the Knee Joint: A Cause of Internal Derangement of the Knee, J. Bone & Joint Surg. **20**: 363-373 (April) 1938.

7. Wilson, P. D.; Eyre-Brook, A. L., and Francis, J. D.: A Clinical and Anatomical Study of the Semimembranosus Bursa in Relation to Popliteal Cyst, J. Bone & Joint Surg. **20**: 963-984 (Oct.) 1938.

8. Callander, C. L.: Surgical Anatomy, Philadelphia, W. B. Saunders Company, 1933.

9. Boyd, William: Surgical Pathology, ed. 4, Philadelphia, W. B. Saunders Company, 1938.

SYMPTOMS

Symptoms of posterior hernia are usually not severe. In our experience disability has never been pronounced and symptoms of internal derangement of the knee have not been encountered. This experience is in direct contrast to that reported by Haggart. Our patients usually complained of aching and stiffness of the knee, and of tumor which caused them much concern. Examination usually revealed a tumor of variable size which is not painful or adherent to the overlying skin but may be firm on extension of the knee and softer on flexion. On flexion it may move side to side, but it has a fixed point at the capsule. The bulk of the tumor is usually distal to the flexion crease of the knee. In some cases fluctuation can be demonstrated

Fig. 1.—Location of bursae with relation to the muscles of the popliteal space.

locally. Pulsation rarely is present in a distended cyst. Bruit and inguinal adenopathy are absent. The patient can walk and use the leg, although there may be some limitation of flexion and rarely some disuse atrophy of the extremity. The popliteal swelling may decrease spontaneously, only to enlarge later, and may be secondary to swelling resulting from arthritis of the knee. Although cases of bilateral Baker's cyst have been reported,[10] the majority are unilateral.

In our series of 15 cases the left knee was affected in 9 cases, the right in 6. The age of our patients varied from 2 to 61 years. Eight of the 15 patients

10. Jefferson, Geoffrey: Bilateral Baker's Cyst: Recurrences After Operation, Proc. Roy. Soc. Med. (Sect. for Study of Diseases of Children) **13**: 162 (June) 1920.

were females. The duration of symptoms varied from four months to twenty years. Results of laboratory tests, including urinalysis, blood count, determination of the value of hemoglobin, Wassermann and the flocculation tests for syphilis were routinely negative. The sedimentation rate was elevated in some cases of arthritis. The roentgenogram revealed a tumor of soft tissue at the posterior aspect of the knee; arthritic changes were frequently present in the knee (fig. 4).

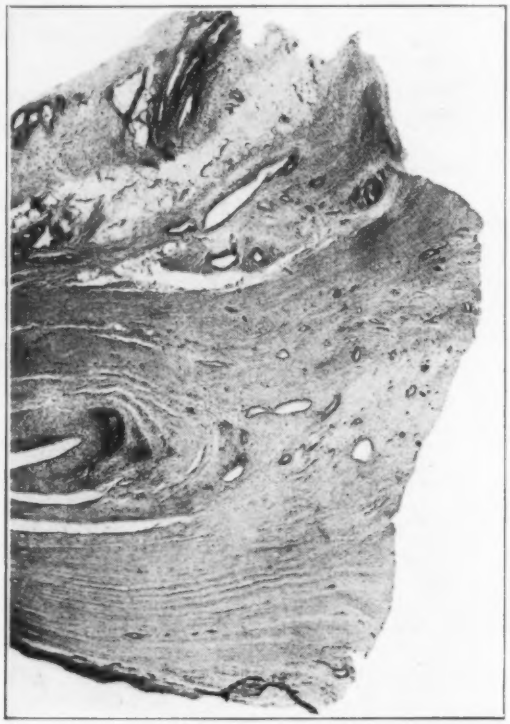

Fig. 2.—Baker's cyst (× 16).

DIAGNOSIS

The diagnosis of posterior hernia of the knee is not difficult if the condition is kept in mind. Transillumination reveals the uniform cystic character of the lesion, and aspiration demonstrates the fluid contents. A roentgenogram made after injection of 100 to 150 cc. of air into the knee,[11] after aspiration of the synovial fluid, usually will reveal an air bubble in the hernial sac; thus connection is demonstrated with the joint. Wilson and his associates stated that occasionally when this procedure fails a roentgenogram made after aspiration of fluid and injection of air into the sac will reveal air in the joint. Injection of air was not employed in our series of cases. It is advisable to bear in mind the potential dangers of sepsis and pulmonary embolism when this procedure is carried out. The characteristic symptoms and findings, including transillumination are usually sufficient but, when doubt exists, roentgenograms made after injection of air into the joint will establish the preoperative diagnosis.

Benign tumors frequently are confused with the condition under consideration. Lipomas have a characteristic soft consistency, do not transilluminate, are usually painless and do not yield fluid on aspiration and therefore injection of air is not advisable. Lipomas may occur elsewhere in the body as multiple tumors. In contrast, xanthomas are of firm consistency; when they are present the ratio of cholesterol to the cholesterol esters in the blood plasma is abnormal or the absolute values of each may be elevated. The mass does not transilluminate. Microscopic examination of frozen tissue may be necessary to establish the exact diagnosis. Enlarged popliteal bursae not communicating with the knee may be difficult to distinguish from those which do communicate with the knee; injection of air or surgical exposure may be necessary to establish the diagnosis.

The most common malignant tumor to be distinguished from cysts that communicate with the knee is fibrosarcoma, which is of a firm to hard consistency, is more fixed to the deep structures than a cyst and does not transilluminate. Pain and stiffness of the knee may be associated with progressive increase in size. Examination of frozen tissue may be necessary to establish its exact diagnosis. The vascular tumors of the popliteal space differ in many respects but are occasionally confused with Baker's cyst. Aneurysm, which is rare, is expansile and pulsating. It may increase in size and cause limitation of motion. The pulsations and bruit synchronize with the heart beat and are decreased when pressure is made on the femoral artery. Arteriovenous fistulas, which are rare, may have the same signs as aneurysm and in addition cardiac enlargement may be present. A history of trauma, Branham's brachycardia on compression of the femoral artery and circulatory deficiency distal to the fistula point to the correct diagnosis. Varicose veins are seen as soft, dark tortuous fluidlike swellings; varicosities are usually present elsewhere on the extremity. Hemangioma appears as a soft, vaguely defined tumor with increased local heat; dilated vessels may be seen locally or elsewhere in the body, and the roentgenogram may reveal calcification in the region of the tumor.

Fig. 3.—Baker's cyst, same case as figure 2; an inner layer of endothelium, a subendothelial layer in which round cell infiltration is pronounced and an outer layer of fibrous tissue (× 95).

With popliteal lymphadenopathy a tender, firm, gland shaped enlargement is present which does not trans-

11. Quaintance, P. A.: Pneumoroentgenography of the Knee Joint: An Analysis of Fifty Cases, J. Bone & Joint Surg. **20**: 353-362 (April) 1938.

illuminate. This subsides with the more distally located causative infection. In rare instances popliteal lymphadenopathy may be associated with lymphomas in other parts of the body.

Infectious swellings may be of the pyogenic or tuberculous type. Pyogenic abscess is characterized by local

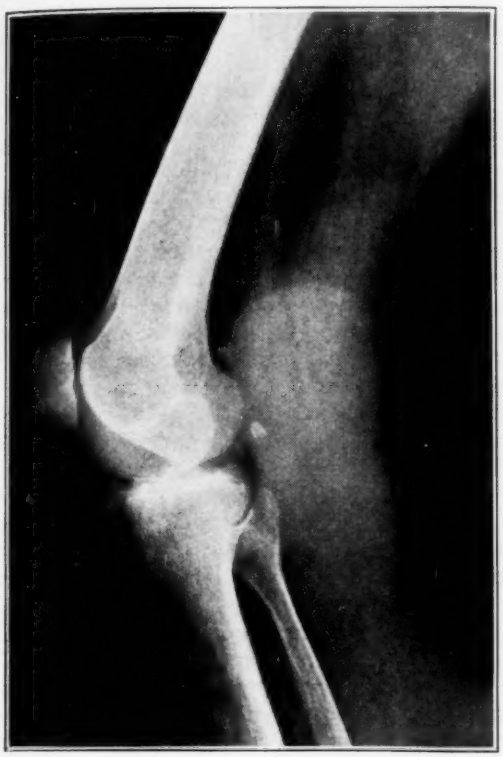

Fig. 4.—Large cystic mass at knee which at the time of operation was found to contain fluid and was connected directly with the joint (lateral view).

evidence of inflammation including tenderness and fluctuation. Fever, limited flexion of the knee, edema of the leg and inguinal lymphadenopathy usually are present, and culture of the pus obtained by aspiration usually reveals the causative organism. With tuberculous abscesses the signs of inflammation are usually minimal unless the abscess is secondarily infected; there is a history of exposure or evidence of tuberculosis elsewhere; biopsy or aspiration and inoculation of guinea pigs confirm the diagnosis.

Charcot's joint is an unstable enlarged joint which may be painful only at the onset of the disturbance. Serologic and neurologic studies confirm the diagnosis of syphilis or syringomyelia. The roentgenogram may reveal loose bodies posteriorly (simulating tumor), with a loss of joint margins, bony sclerosis and destructive arthritis.

PROGNOSIS

The prognosis in cases of Baker's cyst in which treatment is not given usually is unsatisfactory, for progressive enlargement occurs. With conservative treatment consisting of aspiration, rest and bandaging the prognosis is indeterminate. Careful dissection and ligation of the pedicle with the aid of modern aseptic technic is the treatment of choice, and recurrences of the cysts are rare.

The presence of arthritis greatly influences the ultimate restoration of normal function and it is to be remembered that, when arthritis is present, proper measures should be employed in its treatment, in addition to the treatment of the tumor.

TREATMENT

Surgical treatment is the method of choice and is indicated whenever symptoms are present. After application of a tourniquet, an adequate longitudinal incision is made directly over the tumor and parallel to its course. The deep fascia then is divided and the hernial sac exposed. By means of blunt and later sharp dissection, the hernial sac is exposed down to its attachment to the capsule. Flexion of the knee will at times facilitate exposure and aid in dissection. We have not found it necessary to divide the tendons. We feel that it is best to isolate the whole sac down to the pedicle attachment of the capsule, clamp with a hemostat and divide; sufficient length is left to invert the pedicle after roughening its outer surface and applying tincture of iodine. We prefer to use permanent material, such as silk, for the purse-string suture on the pedicle. Simpler methods which may be used in the treatment of the pedicle are ligation alone or wide excision of the pedicle and leaving the capsule open. We feel, however, that the latter procedure predisposes to recurrence. The only known recurrence in our series as well as in that of Wilson and his associates followed excision in which the capsule was not closed. After the sac is excised the wound is closed in layers, a firm dressing is applied and a padded posterior splint is used to immobilize the knee in extension (fig. 5).

"Quadriceps setting" exercises are begun on the second postoperative day. By the end of the first week the patient is allowed up and about the room and ten

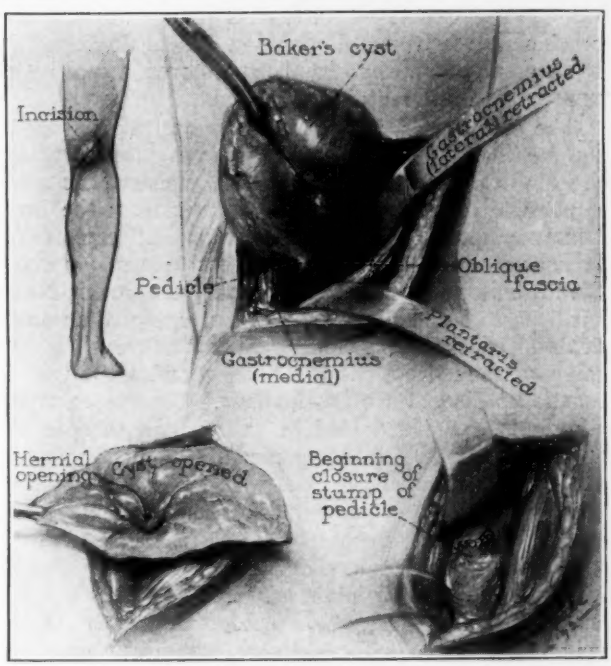

Fig. 5.—The surgical technic employed: the oblique incision over popliteal space and along the course of the cyst; the cyst dissected free and pedicle exposed at the point of entrance into the joint; cyst opened to show inner surface and hernial opening into the joint and pedicle exposed after excision of cyst.

days after operation is walking without crutches. The sutures in the skin are removed on the fourteenth postoperative day, at which time the splint is discarded. Convalescence following operation has been entirely uneventful in our series.

FUNCTIONAL FACTORS IN COMMON DERMATOSES

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LOS ANGELES

During the past two decades the study of functional disease has been pursued with great energy and enthusiasm in all fields of clinical medicine. The most likely causes for the greater attention paid to the functional factors in disease are the considerably increased incidence of functional disease, the comparatively high stage of knowledge of organic disease that has been reached and the development of psychiatry.

The increased frequency of functional disease is apparent to even the casual observer. Some workers [1] have advanced the theory that nervous tension incident to the pressure and accelerated speed of modern living, especially under the highly artificial conditions in the big cities, is responsible, but this is only a partial explanation. The cause of the phenomenon is far more deeply rooted. The peoples of the Western World have long sensed and attempted to adjust to the approach of fundamental changes in their accustomed ways of living, changes which the present political events are bringing near the point of culmination. The nervous systems of generations which have the doubtful privilege of living through a violent phase of transition are bound to suffer not only from the resulting economic insecurity but from the multiple internal conflicts which necessarily arise when ideologic concepts, moral or otherwise, are subjected to rapid change. This is a neurotic age in which emotional tension has reached a degree probably unparalleled in history. It is no wonder that functional disease is flourishing and will continue to thrive until mankind has again found its balance and equilibrium has been restored, a goal which unhappily seems far distant indeed.

The enormous improvement that has taken place in the methods of diagnosis of organic disease, especially the high development of biologic chemistry, has made it possible to differentiate the organic from the functional symptom in a large majority of cases. An attempt at such differentiation twenty years ago would have been based on little more than guesswork. Not a small part of this progress is due to one of the newest fields of specialized medicine, namely allergy. It is a common misconception that allergy and the study of functional disease are antagonistic. On the contrary, allergy has provided bridges with which to span the apparent ravine between organic and functional disease, as will be illustrated later on.

Without the development of psychiatry and, subsequently, of the study of psychosomatic disorders, the investigation and understanding of functional disease would still be in their infant stage. The results of modern psychiatric progress are not of importance to the field of psychiatry or the study of mental diseases alone. What is of more immediate practical importance is that knowledge gained from psychiatric studies has been widely spread not only among psychiatrists but among the members of the rest of the medical world, including the trained social worker as well, and the educated lay public has also been inculcated with psychiatric concepts of basic importance. Without this popularization of psychiatric facts, practical large scale application of psychotherapy in the widest sense would encounter far greater difficulties than it does today.

Recognition of the existence of functional factors has been prompt in many fields of medicine, though perhaps most particularly in gastroenterology and otolaryngology. Consequently such disorders as functional colitis and vasomotor rhinitis are familiar not only to the specialists most closely concerned with them but to the general practitioner as well. There is no hesitancy in including a discussion of the concepts of such functional disorders in lectures to students or in papers in medical journals designed for the general practitioner.

Peculiarly enough, the situation in dermatology is different. Whatever the explanation—and some interesting and logical speculations have recently been set forth by Stokes and Beerman [2]—the fact remains that the existence of functional dermatoses has been maintained only by a few research workers, while the great majority of dermatologists have refused to give it official recognition. The word "official" should be emphasized, because my colleagues and I, both in the Midwest and out here on the coast, have encountered patients who had been told by their physicians that their cutaneous disorders were psychogenic, while the selfsame dermatologists would not support a functional cause of the condition in question on the lecture platform. It appears then that the existence of functional factors in some dermatoses is recognized to a fairly great extent in actual practice while the theory of functional causation is still refused by many. The result of this anomalous situation is that the spread of knowledge of functional disease in dermatology has been very slow. Most of the literature on the subject has been published only in journals designed for the specialist, and some has even appeared in more esoteric mediums available only to physicians who live in cities that are important medical centers. Papers by Klauder,[3] Becker,[4] Stokes,[5] and Cormia and Slight [6] are exceptions to the rule. Moreover, this dichotomy of attitude is responsible for the absence of information on functional disease from most dermatologic treatises designed for students and general practitioners.

Such an attitude of withholding information would be justified only if present day knowledge of functional factors in dermatoses were not sufficiently advanced to be of practical use, or methods of treatment based on this knowledge could not suitably be applied by the general practitioner. To dispose the validity of these two conditions is the object of my discussion.

INTERACTION OF MULTIPLE FACTORS

Conservative evaluation based on my own experience and on the published observations of others makes me believe that functional factors play a role in the follow-

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2. Stokes, John H., and Beerman, Herman: Psychosomatic Correlations in Allergic Conditions, Psychosom. Med. **2**: 438 (Oct.) 1940.

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4. Becker, S. W.: Eczema: Fundamental Practical Considerations, J. A. M. A. **97**: 983 (Oct. 3) 1931.

5. Stokes, J. H.: The Complex of Eczema: A Diagnostic and Etiologic Analysis, J. A. M. A. **98**: 1127 (April 2), 1932; Functional Neuroses as Complications of Organic Disease: An "Office" Technic of Approach, with Special Reference to the Neurodermatoses, ibid. **105**: 1007 (Sept. 28) 1935.

6. Cormia, F. E., and Slight, David: Psychogenic Factors in Dermatoses, Canad. M. A. J. **33**: 527 (Nov.) 1935.

ing dermatoses, which are arranged in descending order according to the degree of demonstrable emotional disturbance:

Acarophobia.
Burning tongue.
Neurotic excoriations.
Dermatitis factitia (all cases in which self infliction purely for malingering purposes can be excluded).
Generalized pruritus of nonorganic origin.
Localized pruritus of nonorganic origin.
Chronic recurrent urticaria (cases in which organic causes cannot be detected or in which the removal of supposedly causal organic factors does not result in cure).
Chronic recurrent dyshidrosis of the hands and feet.
Neurodermatitis or atopic dermatitis.
Alopecia areata.
Rosacea.
Dermatitis herpetiformis and herpes gestationis.
Lichen planus.
Herpes simplex, especially herpes progenitalis.
Chronic recurrent stomatitis aphthosa and its less superficial forms, periadenitis mucosae chronica recurrens and ulcus neuroticum mucosae oris.
Lupus erythematodes (some cases).
Psoriasis (some cases).
Acne vulgaris (some cases).

As will be seen from this list, these dermatoses cover a wide range of causes. Some, such as neurotic excoriations, are evidences of true neuroses. Some, such as urticaria, are considered allergic; in others, such as lupus erythematodes, an infectious basis is recognized, and the cause of others, such as psoriasis, is still unknown.

Little need be said about the true dermatoneuroses. That they are psychogenic is generally recognized. But in the majority of dermatoses included in the foregoing list the functional or emotional factor is not solely responsible; it may not even play the most important role; it may form only one link in a chain composed of several causative elements of which the allergic, the bacterial and the toxic are perhaps the best recognized. Thus the etiologic situation in the so-called allergic dermatoses is more complicated. In conditions such as neurodermatitis or in some forms of chronic recurrent urticaria, it is well established that allergic phenomena, exemplified by positive dermal (scratch or intracutaneous) tests, usually polyvalent, are present, and full credit must be given to the allergist, whose studies have made it possible to view the allergic evidence in these cutaneous disorders in a new light. After clinical and experimental studies [7] had made it clear that the causative role of the discovered allergens was questionable, it became possible to study the problem from a different angle. The results of these studies have substantiated the earlier concepts that patients with such disorders have an inherent, predisposing constitutional background. There is more and more evidence, furnished mainly by British and German observers, which indicates that hypersensitivity to certain allergens is not a constant phenomenon. The threshold of allergic response may be raised or lowered at a given time by the state of emotional tension. A patient may react to an allergen at one time but not at another. Becker and I [8] have made similar observations: One of our patients with food urticaria could eat a certain food without difficulty while on his vacation but could not eat it with impunity at home, even if the food had been obtained from the same source and was apparently unaltered. Another example is furnished by a child whose asthma and dermatitis was aggravated by the ingestion of fish, to which he was allergic; the same fish, however, did not elicit any reactions under conditions prevailing in a sanatorium.[9] The allergic background of such patients is an inherited and therefore unchangeable feature, but the allergic reactivity of the skin can be modified by emotional factors. For example, a patient with food urticaria may be able to eat the food to which he is hypersensitive when he is free from tension and anxiety. Dunbar [10] has shown that symptoms may be eliminated by psychotherapy while the cutaneous reactions to the specific substances remain unchanged. On the other hand, it has been suggested by experiments [11] that intense emotional conflict may produce hypersensitivity to substances not generally pathogenic, a phenomenon which may disappear with the restoration of equilibrium. Or such conflicts may produce a chronic state of tension during which an allergen or a purely emotional factor may be responsible for a sudden recurrence or exacerbation of the dermatosis. The autonomic nervous system is the final common path through which the two interacting factors, the allergic and the functional, become effective. It has been pointed out by Wittkower [12] that allergic and functional disorders have in common an overreaction to stimulation; in both the cause is harmless for the healthy person. The reactions produced by a trivial happening in the emotionally tense person and by the allergen in the allergic patient are of the same character. Thus emotional influences can in many ways favor the creation of allergic states and the elicitation of allergic reactions.

A similar interaction of factors, this time an allergic reaction to an infectious agent and a functional element, may be causative in lupus erythematodes. Moreover, it may safely be assumed that the dermatoses included in the foregoing list for which the cause is still undetermined but in which a functional element is so often apparent are due to complex interacting factors, not all of which are known so far. This concept of multiple causation and interrelations is most important.

It seems that the predisposition to functional disorder like that to allergic response is constitutional. This diathesis is expressed by a tendency toward excitability and an exaggerated capacity for response to stimuli. Becker has assumed the presence of an inherited protoplasmic instability in patients with such a constitutional background, and psychiatrists have suggested that they have exaggerated hypothalamic responses.[13] A great deal of systematic investigative work remains to be done. For practical purposes, however, it is sufficient to recognize the presence of functional factors and to know how to deal with them.

PERSONALITY DIFFICULTIES

The basic feature of the personality of the patient with such a diathesis, regardless of age, sex, education or social stratum, is emotional instability. Limitation of space makes it necessary to confine myself to a sketch of the traits commonly encountered in adult

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8. Becker, S. W., and Obermayer, M. E.: Modern Dermatology and Syphilology, Philadelphia, J. B. Lippincott Company, 1940, p. 105.
9. Rogerson, C. H.: The Psychological Factors in Asthma-Prurigo, Quart. J. Med. **6**: 367 (Oct.) 1937.
10. Dunbar, Helen Flanders: Psychosomatic History and Technics of Examination, Am. J. Psychiat. **95**: 1277 (May) 1939.
11. Gillespie, R. D.: Psychological Aspects of Skin Diseases, Brit. J. Dermat. **50**: 1 (Jan.) 1938.
12. Wittkower, Erich: Studies in Hay Fever Patients (The Allergic Personality) J. Ment. Sc. **84**: 352 (March) 1938.
13. Campbell, Douglas Gordon: Personal communication to the author.

patients; the personality of the similarly affected child will be omitted from this discussion. Though naturally the group of patients with dermatoses in which functional factors play a role encompasses a large variety of personalities, there are two common varieties of personality patterns:

The patient with the first variety is best exemplified by the obviously tense, "high pressure" type of business man. Such a patient, who is usually overly ambitious and energetic, is inclined to assume unnecessary burdens and to take his responsibilities too seriously. He is active, brisk, persistent and exacting. His intelligence is often above average and frequently he is a perfectionist. His inner instability may be masked by outward calm. Needless to say, such patients are not always men and are not always engaged in business; patients of this type are frequently encountered among government officials and petty officers.

The patient with the second variety of personality, who is more likely to be a woman, often has conscious feelings of insecurity and inferiority. She is inclined to worry unduly and to evaluate incorrectly the essential factors in her life, particularly in the sexual sphere. She is emotionally hypersensitive, easily discouraged and extremely sensitive to criticism. Her personal maladjustment is expressed by shyness and an attitude of detachment and self absorption. Her inner disequilibrium makes social contacts difficult.

Information is often obtained concerning the presence of functional disorders of other organ systems either in the patient or in one of his relatives. Thus a history of functional disturbances of the gastrointestinal system, migraine type of headache, low backache or vasomotor rhinitis aids in establishing the pattern to which the constitutional background conforms. The family history is an important source of information. Excessive nervous tension and instability and allergic disorders are frequently present among the blood relatives, and sometimes—especially in cases of neurodermatitis—the occurrences of such abnormalities in several generations can be ascertained.

THERAPEUTIC MANAGEMENT

In approaching the problem of functional disease, the physician must call on his store of patience, sympathy and tact. Once the suspicion is aroused that the patient's disorder may have a functional basis, every effort should be expended to gain his confidence so that the extent of the nervous disturbance may be determined. Treatment of a full blown neurosis or psychosis is distinctly the province of the psychiatrist, who alone has had the specific training and experience necessary to enable him to assume full responsibility for the patient with severe mental disease. Consequently common sense and discrimination must be exercised in deciding which patients must be referred directly to the psychiatrist and which ones will be suitable subjects for the relatively shallow psychotherapy which the practicing physician can administer along with his treatment of the cutaneous disorder. Fortunately the majority of patients with functional dermatoses have only mild emotional disturbances, which can be alleviated by the understanding and interested physician. Therapy of such disorders is not difficult, but not all physicians have the attributes which are essential for carrying it out successfully.

Intelligent sympathy and understanding are the two prime requirements without which no physician can hope to carry out successful psychotherapy. A functional disease is a true disease; its symptoms are very real to the patient, and adopting the attitude that he is "not really sick" will vitiate any attempts to get at the underlying emotional problems. A sympathetic understanding implies not a "hand holding" point of view but a realization that the patient needs assistance in solving his difficulties.

There are two types of physicians who, in spite of interest and sympathy, are unsuited for handling the emotional problems of patients with functional disease. The first is the type of physician whose experience is so limited that he is frequently faced with patients whose personalities, background and life situations he is incapable of understanding. He is likely to blunder in trying to reduce a complex emotional pattern to his own simple formula without taking sufficient cognizance of factors which, though strange to him, are of great importance to the patient's welfare. One must remember that "normal" covers a wide range in sexual, social and moral as well as physical spheres.

The second type is the physician who has unsolved problems of his own which are likely to bias his approach and to distort his therapeutic attempts. He will often do positive damage either by reinforcing abnormal trends in the patient which parallel the course of his own difficulties or by failing to recognize important factors because they play a role in his own problems.

However, the physician who is equipped with the necessary attributes and a good measure of common sense can greatly aid the patient in unraveling his emotional problems. The "high pressure" type of patient needs advice on how to restore balance to the conduct of his life. The sensitive, easily depressed person needs encouragement and help in gaining a perspective toward his needs and interests. In addition to lending a sympathetic ear to the patient's difficulties and giving advice, the physician can utilize several practical means to reinforce the effects of therapy. For instance, he can often help to eliminate causes of friction by interviewing marital partners or relatives and by suggesting alterations in living arrangements. He can assist in outlining a regimen which will provide for adequate rest, including daily naps and regular sleeping hours. He can discourage excessive social striving. He can insist on a daily balance between work and play and point out the value of restful vacations. The relaxing beneficial effects of daily sunbaths have been well established. The acquisition of an ultraviolet lamp to provide artificial sunshine during the rainy or foggy months is a warranted investment. Relaxation may also be achieved by regular daily exercises and by taking walks, preferably in the country. Sedation is often a necessary adjunct to the foregoing therapeutic suggestions.

It has been my experience that such simple measures often aid in restoring the functional stability of the nervous system. If they are applied in addition to well established therapeutic methods, the prognosis of dermatoses in the causation of which emotional factors are operative is considerably improved.

CONCLUSION

A common sense evaluation of complicating or underlying emotional abnormalities by an understanding and sympathetic physician can be an important factor in the patient's recovery from a chronic recurrent dermatosis.

1930 Wilshire Boulevard.

MULTIPLE SPONTANEOUS IDIOPATHIC SYMMETRICAL FRACTURES

MILKMAN'S SYNDROME

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In 1930 and in 1934 Milkman [1] reported a case exhibiting a skeletal osteopathy which he considered unique and which he named "multiple spontaneous idiopathic symmetrical fractures." In the succeeding twelve years we were able to find references to only 3 similar cases [2] in the English literature and to 15 cases in the foreign medical literature. Our purpose in this report is to review briefly the literature and to add a twentieth case.

This syndrome is characterized by pain, disturbances of gait and the radiologic appearance of multiple transparent bands or zones often symmetrically located in various portions of the skeleton, usually interpreted as representing fractures. Locomotion eventually becomes so impeded as to render the patient bedfast.

REPORT OF CASE

History.—Mrs. H. S., aged 34, a native American housewife, was admitted to Mount Sinai Hospital on July 16, 1942 complaining of weakness, painful lower extremities and inability to walk. She described difficulty on arising from the supine or sitting position, limitation of motion of the right hip and calf and pain in the left thigh on weight bearing which at the time of admission were so severe as to preclude any attempt at locomotion. A peculiar, hesitant, waddling gait had been noted before complete incapacitation had developed.

Past Medical History: The patient had a normal spontaneous birth at term; her birth weight was about 5 pounds (2.3 Kg.). At the age of 6 weeks an illness developed which required rectal feedings for three weeks and produced considerable loss of weight and poor health for two years. At the age of 7 years a fracture of the right tibia resulted from trauma so mild that an osseous defect must have been present at that time. An "infection" of this fracture required "bone scraping," suggesting that an osteomyelitis had been present. Her only childhood diseases were measles at 6 years and whooping cough at 9 years of age. Trauma to the right knee at 14 years necessitated another "bone scraping." She was ambulatory shortly after this period and recalls that at 17 years of age she weighed 88 pounds (40 Kg.). Intermittent pains in the right thigh and inability to walk without the aid of canes occurred at 21 years and continued until a remission five years later. In 1938 cramplike pains in the left thigh, most severe on arising, necessitated another hospitalization, when only tenderness to deep palpation in the medial aspect of the left thigh could be elicited on physical examination. Roentgenograms taken at that hospital revealed "evidence of an osteomyelitis of the lower end of the right tibia, multiple incomplete fractures through the cortices of both femoral shafts, thinning of the femoral necks, flattening of the femoral heads with erosion of both acetabular cavities and a number of old fractured ribs." She was readmitted a year later for similar complaints and was discharged with the tentative diagnosis of a "variant of osteogenesis imperfecta tarda." Her symptoms continued without amelioration, finally necessitating her present admission.

Systemic Inquiry.—Aside from her main complaints, the patient considered herself in fair health, though weakness and loss of weight occurred after confinement to bed for any appreciable length of time. Her menstrual history was normal. No pregnancies or miscarriages had occurred during her five years of married life.

Family History.—No similar illness had appeared in any member of her family. There was no history of any hereditary or familial disease. The mother was living and well; the father died in 1920 of "cancer of the throat." Three siblings were living and well.

Physical Examination.—On admission the temperature, pulse rate and respiratory rate were normal and the blood pressure was 94 systolic and 60 diastolic. The patient was thin, sallow complexioned and dwarfed; she measured 52½ inches (133 cm.) in height and weighed 58½ pounds (26.6 Kg.). Her head was proportionate to her body; there was no tenderness of the skull. The scleras were white, the fundi were normal, vision was 6/6 and the visual fields were normal. The mouth, pharynx and tongue were normal; compensation existed for extracted teeth. There was slight submaxillary adenopathy; the thyroid was not palpable. She had atrophic breasts, generally limited expansion and no rib or sternal tenderness; the heart, lungs and abdomen were normal. Pelvic and rectal examinations were negative. Neurologic examination revealed some disuse atrophy of the leg muscles, generally hyperactive tendon reflexes and unsustained ankle clonus. Babinski, Chvostek and Trousseau's signs were not elicited. Skeletal examination of the trunk and limbs showed that they were in normal proportions. There was mild kyphosis and some limitation of spinal flexion. Rotation and lateral bending were demonstrable, but no spinal tenderness or settling. There was moderate deep tenderness to palpation over the left midthigh and limitation of abduction and flexion at the left hip. No bowing or gross deformities of the long bones could be demonstrated.

Laboratory Studies.—The hemoglobin level was 13.9 to 14.5 Gm. (96 to 100 per cent), red blood cells numbered 4,800,000, white blood cells 6,500 to 7,000 with 50 to 55 per cent segmented cells, 2 per cent nonsegmented cells, 41 to 44 per cent lymphocytes, 2 per cent monocytes, 1 per cent eosinophils and 290,000 platelets.

The urine usually was a pale straw color with a specific gravity of 1.009 to 1.012 and a trace of protein; sugar showed a faint trace on June 13 and Oct. 5, 1939, was plus 2 on June 17, 1942 and was not present on July 17 and 29, 1942; there was no ketonuria and no appreciable number of red or white cells. Bence Jones protein was not present.

June 16, 1938 the blood sugar was 96 mg. per hundred cubic centimeters, urea 10 mg., calcium 9.6 mg., phosphatase 5.6 Bodanski units; result of the dextrose tolerance test: fasting 75 mg. of sugar, thirty minutes 190 mg., sixty minutes 162 mg. and one hundred and twenty minutes 102 mg.

Oct. 5, 1939 the blood sugar was 87 mg., urea 14 mg., calcium 11.0 mg., basal metabolic rate plus 9 per cent.

July 17, 1942 the blood sugar was 90 mg., urea 15 mg., calcium 9.4 mg., phosphorus 2.0 mg., phosphatase 14.8 units (Kay-Roberts), sedimentation rate 16 mm. in sixty minutes.

August 18 the blood urea was 16 mg., chlorides 520 mg. (plasma).

August 19 the blood calcium was 9.7 mg., phosphorus 2.0 mg., phosphatase 14.1 units (Kay-Roberts).

August 20 the blood cholesterol was 270 mg., cholesterol esters 160, icterus index 8 units, basal metabolic rate plus 8 per cent.

August 24 the blood urea was 17 mg., urea clearance 73 per cent, uric acid 2 mg.

August 28 the Fishberg concentration test showed a specific gravity of 1.012, 1.011 and 1.012; a blood galactose tolerance test revealed a peak level of 83 mg.

September 3 the blood calcium was 9.3 mg., phosphorus 2.6 mg., phosphatase 14.2 units (Kay-Roberts), blood sodium 401 mg., potassium 15.1 mg., total blood proteins 7.8 mg., serum albumin 4.3 mg., serum globulin 3.5 mg., dextrose tolerance test: fasting 94 mg. of sugar (urine negative), thirty minutes 180 mg. (urine positive), sixty minutes 190 mg. (urine

From the Medical Service of Dr. Abraham Trasoff and the Department of Radiology, Mount Sinai Hospital.

1. Milkman, L. A.: Pseudofractures (Hunger Osteopathy, Late Rickets, Osteomalacia): Report of Case, Am. J. Roentgenol. **24**: 29-37 (July) 1930; footnote 14.

2. Leedham-Green, J. C., and Campbell Golding, F.: Osteoporosis Melolytica ("Multiple Spontaneous Idiopathic Symmetrical Fractures"), Brit. J. Surg. **25**: 77-83 (July) 1937. Milkman, L. A., in discussion on Camp and McCullough.[12]

moderately positive), one hundred and twenty minutes 100 mg. (urine weakly positive), one hundred and eighty minutes 65 mg. (urine negative).

September 9 the blood chlorides were 610 mg. and the carbon dioxide combining power was 47 volumes per cent.

Wassermann, Kahn and Kline reactions of the blood were negative.

Results of the calcium balance study, bromsulphalein test and gastric analysis are given in table 1.

TABLE 1.—*Results of Tests*

Calcium balance study					
Daily intake of calcium, 500 mg. orally					
8/31/42—Feces 453 mg. Ca + urine 9.1 mg. = total 462.1 mg. Ca					
9/ 1/42—Feces 524 mg. Ca + urine 9.1 mg. = total 533.1 mg. Ca					
9/ 4/42—Feces 641 mg. Ca + urine 25.0 mg. = total 666 mg. Ca					
9/15/42—Bromsulphalein test:				Retention in 30 Minutes	
5 mg. per Kg.				0%	
10 mg. per Kg.				2%	
9/23/42—Gastric analysis					
	Fasting	30 Min.	60 Min.	90 Min.	120 Min.
Free acid	30	25	20	20	30
Total acid	45	40	30	35	50

Cystoscopy revealed a grossly normal urinary tract, normal renal function and no pyuria. The electrocardiogram was normal.

A provisional diagnosis of osteomalacia was entertained. Skeletal roentgenograms were then made which revealed changes strikingly similar to those described by Milkman as being characteristic of the Milkman syndrome. The films were submitted to Dr. Milkman, who confirmed the diagnosis. They

Fig. 1.—Lesions of forearms.

revealed generalized calcium deficiency of the skeleton, small punched out cortical notches and transverse zones of rarefaction traversing part or all of the bone, usually at right angles to the long axis. In a number of lesions the surfaces adjacent to the decalcified bands showed a narrow line of condensation; some periosteal proliferation was observed at the edge of the defects. In the left scapula the transverse band appeared to be completely filled in with new bone, and two metatarsal pseudofractures were healed. In a number of paired bones the lesions were symmetrical. A deformity of the right clavicle was noted at the site of a pseudofracture; the femurs showed bilateral coxa vara and the pelvis was heart shaped. There were no areas of rarefaction in the skull or vertebrae, though the latter exhibited decalcification and a diminution in height, a biconcave appearance of the bodies and some scoliosis.

The following fractures were noted: (1) symmetrical fractures of both clavicles, (2) symmetrical fractures of the axillary borders of both scapulas, (3) right radius and ulna, (4) left ulna, (5) numerous ribs, (6) both femurs (asymmetrical), (7) right tibia and (8) left fifth and right third metatarsal.

Fig. 2.—Lesion in right tibia.

COMMENT

No standard nomenclature has been adopted to classify this type of skeletal dystrophy. Leedham-Green [2] objected to Milkman's awkward title and suggested the term "osteoporosis melolytica" or "osteoporosis meloclastica," which pertained to an elective affinity of the process for the bones of the limbs and emphasized the doubt as to whether the lesions observed by radiologic examination indicated true fractures or merely areas of decalcification. These lesions, however, are not limited to any portion of the skeleton, and it is thus doubtful whether such a nomenclature condensation is justifiable. Hopf [3] proposed the name morbus Milkman or dysbasia osteolytica dolens. Since Milkman first described this syndrome, the use of the patronymic title "Milkman's syndrome" is logical until the pathogenesis of this osteopathy is more completely understood.

In Milkman's original description of the disease, a woman aged 43 complained of lameness of the back, pain on stooping over and difficulty on arising from a supine or sitting position of nine years' duration and exhibited an uncertain duck waddle gait, evidence of

3. Hopf, Max: Radiol. clin. **9**: 74-88 (March) 1940, cited in discussion by Milkman.[14]

loss of weight, muscle atrophy, diminished stature and pain on pressure over the sternum, ribs and femurs. Forty-three multiple transparent bands or pseudofractures were noted, many of which were symmetrical. In 1934 Milkman published the postmortem findings of this case, which will be described later.

Michaëlis [4] published a report of a similar case in 1932 concerning progressive skeletal pain in a German soldier aged 18 serving in World War I. Roentgenograms in 1926 revealed widespread lesions similar to those described by Milkman plus pelvic involvement and a small defect in the skull. Several biopsies obtained from the cranium, shoulder and radius served only to eliminate the diagnosis of myeloma; parathyroid tissue obtained for biopsy appeared normal.

In 1933 Debray and his associates [5] described a woman aged 51 whose symptoms began ten years previously, shortly after a pregnancy, and exhibited a cycle of remissions and exacerbations coinciding with sojourns in the country and return to city life. Walking and finally movement of any kind became sufficiently painful to produce complete incapacitation. Symmetrical fissures of many bones were discovered on x-ray examination. A second report in 1940,[6] which probably was a further description of the same case, described a functional cure and substantial skeletal recalcification on

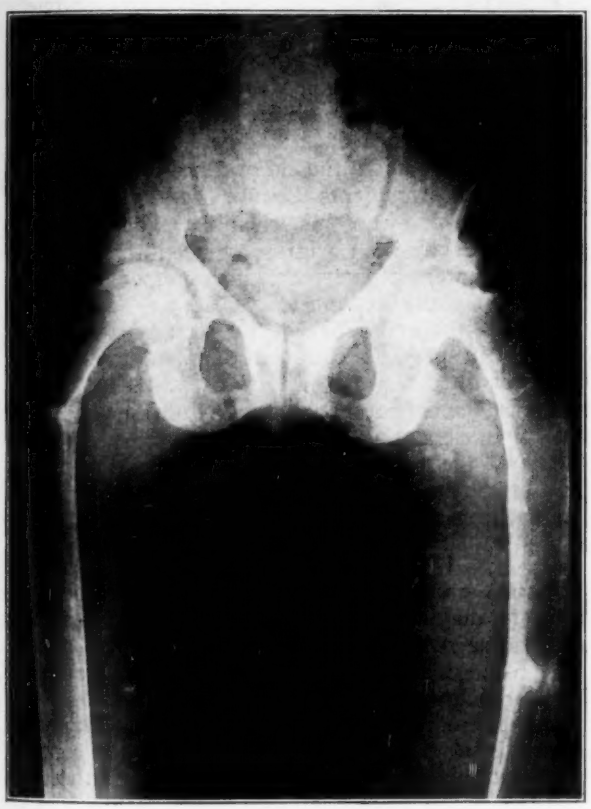

Fig. 3.—Lesions in femurs (note heart shaped pelvis).

phosphorus (phospho-calcique) and an antisyphilitic arsenical. The patient was followed until 1937 and remained well.

In 1936 Duval [7] described the condition of a man aged 35 who complained of leg cramps and difficulty in rising from the recumbent position. Clinical examination revealed only anterolateral symmetrical curvature of the thighs. X-ray examinations of the femurs revealed two symmetrical fractures on the lateral sur-

Fig. 4.—Metatarsal lesions.

faces apposed by dense bone on the medial surfaces. It was his impression that the pathogenesis was a periosteal dysplasia or osteopsathyrosis. Bone grafts inserted in the fractured areas failed to fill the defects in the femurs completely.

Dall'Acqua [8] reported the syndrome in a woman aged 43 with a four year history commencing with pain in the lower extremities and progressing to involve many areas. Physical examination revealed only focal areas of deep skeletal tenderness. A great number of transparent striae, as he called them, which were identical with the pseudofractures and bands described in previous reports, were noted on x-ray examination.

Guillain, Lereboullet and Auzepy's [9] patient was a woman aged 55 presenting a typical clinical and x-ray picture of the Milkman syndrome. Five months of treatment with irradiated ergosterol relieved pain completely, restored normal locomotion and resulted in a gain of 7 pounds (3,175 Gm.).

The initial symptoms of a nun aged 58, reported by Garcin, Legrand and Bernard,[10] was difficulty in arising from her knees after prayers. A remarkable improvement followed therapy with parenteral vitamin A and calcium and oral vitamin D. Illustrations included in their report showed progressive repair of the lesions over a period of thirteen months.

4. Michaëlis, L.: Zur Klinik der Systemerkrankungen des Skeletts, Fortschr. a. d. Geb. d. Roentgenstrahlen **45:** 187-199 (Feb.) 1932, cited by Milkman.[14]

5. Debray, M.; André, Thomann, and Gireaux: A Case of Multiple Spontaneous Fractures Difficult to Classify; Nosologic Discussion, Bull. et mém. Soc. méd. d. hôp. de Paris **49:** 1038-1048 (July 17) 1933.

6. Debray, M.: Chronic Painful Osteopathy with Multiple Symmetrical Pseudofractures; Case, Bull. et mém. Soc. méd. d. hôp. de Paris **56:** 573-576 (Oct. 29) 1940.

7. Duval, P., and Merle d'Aubigne, R.: Old Symmetrical Fractures of Both Femoral Diaphyses, Incompletely Consolidated and Probably Related to Periosteal Dysplasia (Lobstein's Osteopsathyrosis); Case, J. de chir. **47:** 248-252 (Feb.) 1936.

8. dall'Acqua, V.; Levi, P., and Bordoli, L.: Generalized Osteopathy with Multiple Symmetrical Striae Due to Reabsorption (Milkman Syndrome), Radiol. med. **23:** 733-749 (Oct.) 1936.

9. Guillain, G.; Lereboullet, and Auzepy, P.: Milkman Syndrome (Multiple Symmetrical Striae of Resorption); Nosographic Considerations; Case, Bull. et mém. Soc. méd. d. hôp. de Paris **53:** 879-889 (June 21) 1937.

10. Garcin, R.; Legrand, G., and Bernard, P.: Milkman Syndrome of Unknown Etiology; Clinical Cure and Roentgen Improvement Under Influence of Vitamin and Calcium Therapy, Bull. et mém. Soc. méd. d. hôp. de Paris **53:** 1166-1172 (July 19) 1937.

The only report in the British literature is that of Leedham-Green and Campbell Golding.[2] Their patient, a woman aged 24, had presented typical symptoms for six years.

In 1938 6 cases [11] were reported in the literature, all so strikingly similar in clinical and radiologic characteristics that a detailed description would be superfluous. Leriche and Jung's report [12] concerned a woman aged 30, and the authors discussed a similar case that had come to their attention through a Dr. Tassin.

In 1940 Max Hopf [3] published reports of 3 cases expressing his agreement with Milkman concerning the specificity of the disease and proposing the nomenclature adjustment discussed previously.

INCIDENCE

The majority of reported cases occurred in middle aged women, although Michaëlis first noted the condition in a soldier aged 18, and Leedham-Green's patient was a woman aged 24. In view of the rarity of this entity, the distribution of 15 of the 19 cases on the European continent probably is not a significant finding but may represent unfamiliarity with this syndrome among American and British physicians.

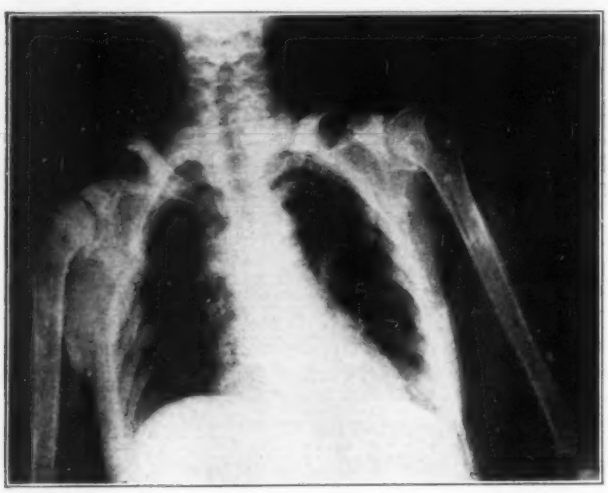

Fig. 5.—Lesions in clavicles, axillary border of both scapulas and ribs.

ETIOLOGY

Any discussion of the cause of this unusual condition must remain speculative. There has been no evidence to indict nutritional deficiency, parathyroid dysfunction, endocrinopathies or trauma as the cause of the skeletal striae. Camp and McCullough's [13] theory that the occurrence of all such lesions may be ascribed to the action of conditions which impose stress and strain on bones seems unlikely to us in view of the absence of any objective demonstration of strain in our case or the cases reported in the literature and the peculiar location of many of the transparent zones (i. e. axillary border of scapula, pubic rami). Milkman [14] described postmortem findings of increased vascularity of all the involved osseous tissues which, he believed, suggested the presence of a trophic disturbance producing intense focal decalcification.

PATHOLOGY

The postmortem findings in Milkman's case represent the only source for the study of the morbid anatomic changes in the disease. The pathologic visceral changes were not distinctive. The fractures appeared as irregular breaks in the continuity of otherwise normal bone. Sections were submitted to several pathologists, whose diagnoses varied from osteomalacia to osteopsathyrosis. Increased vascularity about the fractures was pointed out by Milkman. Bone biopsies obtained by Michaëlis [4] merely served to rule out the diagnosis of myeloma. The parathyroids of the patient at autopsy and the parathyroid biopsy reported by Michaëlis revealed normal glandular tissue.

SYMPTOMS AND SIGNS

The clinical picture almost invariably conformed to a readily recognizable pattern. The onset was insidious, with pain developing either simultaneously in several portions of the skeleton or progressively involving many bony parts. Pain in the lower extremities and lower part of the back, cramplike in nature or resembling lumbago, was aggravated by motion, walking or excessive fatigue. Difficulty on arising from a supine, sitting or kneeling position was a frequently described early complaint. The gait became awkward and hesitant and resembled a duck waddle. Locomotion soon was impossible without the aid of canes or crutches, and eventually most patients became bedridden invalids. The duration of symptoms when the patient was first seen by the physician who recognized the syndrome usually was four to five years, interspersed with many episodes of remissions and exacerbations. The general health was preserved except for loss of weight and weakness in patients confined to bed for prolonged periods of time.

Physical examination revealed little beyond focal areas of skeletal tenderness, often not corresponding exactly to the roentgenologic location of the lesions. None of the usual signs of fracture such as fragment mobility, pseudoparalysis or crepitus existed.

LABORATORY STUDIES

The laboratory is of no help in establishing or eliminating the diagnosis. Some of the findings recorded in various case reports are included in table 2.

The blood calcium may be normal or elevated and the phosphorus low, normal or elevated; the phosphatase may be normal but is usually high. The degree of calciuria is inconstant. Important information concerning calcium-phosphorus metabolism will be forthcoming when more calcium balance studies are reported. One patient was in normal balance,[2] whereas our patient exhibited negative balance. Repetition of our balance studies when the calcium was administered intramuscularly failed because of technical difficulties. The basal metabolic rate was normal in 4 cases, plus 22 per cent in 1 and plus 41 per cent in another. Milkman's patient and ours exhibited occasional glycosuria. A dextrose tolerance test performed on our patient revealed a slightly elevated dextrose peak and glycosuria in two urine specimens. Several fasting blood sugars have always been low normal.

11. Lombard, P., and Tillier, H.: Spontaneous Fissuration of the Skeleton, Mém. Acad. de chir. **64:** 336-351 (March 2) 1938. Ravault, P. P.; Girard, M., and Didierlaurent: Symmetrical Spontaneous Fissuration (Milkman Syndrome), Lyon méd. **162:** 189 (Aug. 21), 217. (Aug. 28) 1938. Halbron and Bernard: Soc. franç. d'electrothérapie, Feb. 27, 1938, cited by Ravault, Girard and Didierlaurent. Leriche and Jung.[12] Roger and Huguet.[16]

12. Leriche, R., and Jung, A.: Spontaneous Nontraumatic Osseous Fissures of Undetermined Origin; Case, Lyon. chir. **35:** 47-52 (Jan.-Feb.) 1938.

13. Camp, J. D., and McCullough, J. A. L.: Pseudofractures in Diseases Affecting the Skeletal System, Radiology **36:** 651-663 (June) 1941.

14. Milkman, L. A.: Multiple Spontaneous Idiopathic Symmetrical Fractures, Am. J. Roentgenol. **32:** 622-634 (Nov.) 1934.

X-RAY APPEARANCES

The diagnosis must necessarily be made by the roentgenologist. Focal osteoporotic areas progress to form translucent bands, zones or striae of intense local decalcification which appear to spread across the bone or around its circumference, varying in size from several millimeters to a centimeter or more. Eventually a complete transverse solution of bone continuity resembling a fracture may be produced. The bone edges are usually irregular. The bone above and below this transparent zone may appear relatively normal or may exhibit evidence of deficient calcium content. Involvement of paired bones may be exactly symmetrical, though this is not necessarily so. Early there is no osseous deformity produced, but in cases followed for protracted periods certain changes have been described. Milkman [14] reported separation, displacement and overlapping; Milkman [14] and Debray [15] noted settling of the vertebral column; dall'Acqua [8] described a heart shaped pelvis, which was present in our case; Michaëlis [4] and Debray [15] described coxa vara, which was present in our case; Milkman [14] also described rib and ulnar angulation; unilateral clavicular angulation was present in our case. Though Milkman believed that the disease was characterized by the absence of callus formation, Guillain and his associates,[9] Debray and his group [5] and Garcin and his associates [10] demonstrated recalcification of the striae and fractures after suitable therapy, and other authors, including ourselves, have noted attempts at callus formation in isolated lesions.

TABLE 2.—*Findings in Various Cases*

Author	Calcium, Mg. per 100 Cc. of Blood	Phosphorus, Mg. per 100 Cc. of Blood	Phosphatase	Calciuria, Mg. per 24 Hrs.	Calcium Balance
Milkman	10-15	2-6.8	.....	400	
Michaëlis	11.6-12.7	1.6	.....	...	
Debray	10.8-11.4	6.7	.....	525	
dall'Acqua	8.9- 9.8	10.3	48.6 units	...	
Guillain	11.1-11.3	4.8	3.7 units	...	
Garcin	10.4	.....	3.5 Bodanski units	...	
Leedham-Green	9.6	2.2-2.8	30 units	...	Normal
Our case	9.3-11	2.0-2.6	14.1-14.8 Bodanski units	91-250	Negative

DIAGNOSIS

The diagnostic criteria have been summarized by Leedham-Green and Campbell Golding [2] and are listed, with modifications, as follows:

I. Symptoms and signs:
1. Pain across the lower part of the back.
2. Pain in the lower extremities.
3. Awkward, hesitant, "duck waddle" gait.
4. Difficulty in arising.
5. Physical examination negative or reveals focal tender areas.

II. Radiographic features:
1. Circular areas of calcium deficiency or translucent transverse bands or irregular pseudofractures.
2. Lesions usually symmetrical.
3. Little or no callus formation before therapy.
4. Osseous deformities noted only late.

DIFFERENTIAL DIAGNOSIS

A variety of diagnoses have been confused with this syndrome and probably many cases have gone unrecognized for this reason. Osteomalacia is the most frequent diagnosis entertained in these patients, and it is entirely possible that the syndrome represents a variant or subgroup of the osteomalacias. Females comprise the majority of the cases in both conditions and multiple fractures are common to both osteomalacia and Milkman's syndrome. At least two thirds of osteomalacic patients are women who have had numerous and frequent pregnancies. Undernutrition as an etiologic factor is frequently observed, and many students of the disease look on it as a form of adult rickets. Early osseous deformities are characteristic of osteomalacia, and adequate therapy almost invariably will produce x-ray evidence of recalcification. The early production of kyphoscoliosis, lordosis and bending of long bones occurs in osteomalacia but has not been noted until the very late stages of Milkman's syndrome.

Fragilitas ossium is characterized by a familial tendency, blue scleras, bilateral deafness and cortical thinning of long bones, with the production of multiple, irregular, sharply angulated fractures followed by adequate callus formation often exhibiting a series of annular rings of callus. Fractures in such patients who live beyond adolescence are rare.

Osteitis fibrosa cystica presents x-ray evidence of bone cysts. The high blood calcium, low phosphorus, elevated phosphatase and hypercalciuria should establish the diagnosis without difficulty.

Hunger osteopathy, described mainly during and shortly after World War I,[14] was considered to represent a form of osteomalacia and may be differentiated from Milkman's syndrome by the presence of dietary deficiencies, early osseous deformities and healing with calcification.

Pathologic fractures may occur in Albers-Schönberg disease (marble bones) and transverse bands have been noted in the shafts of long bones.[16] These fractures heal readily, and the x-ray finding of diffuse osteosclerosis is diagnostic. Pseudofractures have been observed in a great variety of unrelated diseases [13] which should be differentiated from the Milkman syndrome without difficulty. These include rickets, celiac disease, steatorrhea, sprue, hyperthyroidism, osteitis deformans, congenital syphilis, states of overloading bone (march fracture and the like), adrenal pituitary bone dystrophy and severe chronic acidosis or hyperglycemia.

TREATMENT

The aim of therapy has been directed to the production of calcification of the osseous lesions. Phosphorized cod liver oil, viosterol, sunlight and ultraviolet irradiation failed to improve Milkman's patient.[14] A functional cure and substantial skeletal recalcification was produced by the use of phospho-calcique and an antisyphilitic arsenical by Debray.[6] Bone grafts surgically placed in the symmetrical femoral fractures reported by Duval and Merle d'Aubigne [7] failed to fill in the osseous defects adequately. The case reported by Guillain [9] showed a striking amelioration of symptoms and recalcification of bone lesions by the use of irradiated ergosterol. Garcin's patient [10] improved following a course of therapy with parenteral vitamin A and calcium and oral vitamin D. Leedham-Green's patient [2] was being treated with a preparation containing vitamins A and D and calcium lactate at the time of their report. Our patient has shown some clinical improvement on a regimen of oral vitamin D (50,000 units daily) and calcium lactate, ultraviolet irradiation of the torso and diathermy to the painful areas. She is now able to walk short distances with the aid of a cane, but her roentgen picture is unchanged.

15. Debray, André, Thomann and Gireaux.[5] Debray.[6]

16. Roger, H., and Huguet, J.: Milkman Syndrome; Case, Bull. et mém. Soc. méd. d. hôp. de Paris **54**: 1434-1437 (Aug. 1) 1938.

SUMMARY

1. Nineteen cases of multiple spontaneous idiopathic symmetrical fractures (the Milkman syndrome) have been collected from the literature and a similar case has been added.

2. The skeletal osteopathy of this condition is characterized by pain, disturbances of gait and the radiologic appearance of spontaneous multiple symmetrical transparent bands or pseudofractures exhibiting little or no callus formation, which progress to render the victim bedfast.

3. The disease appears mainly in middle aged women.

4. There are no distinctive laboratory findings.

5. The etiology and pathogenesis are unknown. The syndrome may represent a variant or an atypical form of osteomalacia.

6. In the 1 case which came to autopsy increased vascularity about the osseous lesions represented the sole distinctive pathologic change.

7. Several reported cures have resulted from treatment with calcium, vitamin D, arsenicals and vitamin A.

ADDENDUM.—After twenty-five weeks of therapy with 50,000 U. S. P. units of vitamin D orally and 3 Gm. of calcium lactate daily our patient has gained 19 pounds (8.6 Kg.), is free of pain, is ambulatory, although her bizarre duck waddle gait persists, and is able to earn her living. Complete skeletal roentgenograms were repeated on April 5, 1943 and revealed excellent healing of all pseudofractures previously enumerated; no new lesions were noted.

Fifth and Reed streets.

Clinical Notes, Suggestions and New Instruments

A TWENTY-EIGHT YEAR FOLLOW-UP ON A SPLENECTOMY FOR HEMOLYTIC ANEMIA

PERSISTENCE OF HOWELL-JOLLY BODIES

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In 1915 a man aged 40 (J. L.) with severe hemolytic anemia was studied by us in the Hospital of the University of Pennsylvania. His presenting symptoms were weakness, dizziness, dyspnea and edema, which had been increasing for two years. The metabolism studies, before and after splenectomy, which were reported in 1916,[1] revealed that soon after splenectomy there occurred a retention of nitrogen, a decrease in the output of uric acid and iron and a pronounced decrease in the definitely elevated excretion of urobilinogen and urobilin.

On admission in 1915 the patient's blood counts showed a hemoglobin varying from 20 to 26 per cent, a red count between 1,100,000 and 1,700,000 per cubic millimeter, a low white cell count and, in addition, all the morphologic picture which in those days established the diagnosis of pernicious anemia; there were many normoblasts and typical megaloblasts. The coagulation time was normal, as was the hemolytic range in hypotonic salt solution; platelets were approximately 100,000 per cubic millimeter. No Howell-Jolly bodies were seen before operation. Achlorhydria was found.

The physical examination revealed a yellowish pallor and an enlarged spleen. No changes were noted in the tongue and no changes in the nervous system. In the light of our present day knowledge, this case might well not be accepted as one of pernicious anemia; but in 1915 we had little doubt of the correctness of our diagnosis of "pernicious anemia of the hemolytic type." It is true that there is a hemolytic element in most cases of pernicious anemia but seldom, if ever, to this degree. Some today would undoubtedly term this simply an acquired hemolytic anemia—but such cases are usually more acute. There was no familial history to support a diagnosis of the congenital type.

Transfusions improved the blood count and the patient's general condition sufficiently for splenectomy to be performed successfully. The spleen weighed 340 Gm. and showed "chronic diffuse and follicular splenitis, with passive congestion and excessive pigmentation, probably hemosiderin." Following operation there was steady improvement; within ten weeks the hemoglobin had risen to 70 per cent, the red cell count to 3,580,000 and the white cell count to normal. Morphologically the blood picture was normal except for the usual postsplenectomy appearance of Howell-Jolly bodies. All evidences of increased blood destruction disappeared. The patient was without symptoms and in excellent health.

Reports of continued good health and normal blood counts were received for four years and then the patient was lost sight of for twenty-four years. On March 25, 1943, just three days short of twenty-eight years since his first admission, the patient stopped in to report. He is now 68 years of age and has been in excellent health ever since his operation except for a "touch of diabetes easily controlled by diet" and a little lumbago. His appearance was that of an elderly man in peculiarly good physical condition. His blood count was normal with a hemoglobin of 99 per cent. The stained blood spread revealed healthy erythrocytes, a normal number of white cells and platelets and a normal differential white count. A small number of Howell-Jolly bodies were present.

Survival for twenty-eight years after splenectomy for hemolytic anemia is by no means unknown; in fact, Dawson[2] refers to a patient, the first ever to be splenectomized for hemolytic anemia, who survived the operation for forty-five years. On the other hand, it is probable that the present report of the finding of Howell-Jolly bodies twenty-eight years after splenectomy is unique. Most of the reported series of cases followed up years after splenectomy have been recorded from the surgical point of view, and, unfortunately, not one has been found in which any observation on Howell-Jolly bodies has been mentioned (Diamond,[3] Pemberton,[4] Rousselot,[5] Eliason and Stevens[6]).

Our case, therefore, may well be the longest reported persistence of these peculiar bodies after splenectomy. First described by Howell[7] in 1890, later by Jolly,[8] Schmauch,[9] Morris[10] and others, these bodies have come to be called Howell-Jolly bodies. Again an eponym reveals our ignorance. Nothing is known as to the origin or significance of these bodies. It is usually assumed that they represent a residual particle of nuclear material remaining after the breakup of the nucleus of the erythroblast. Undoubtedly their staining reactions are those of nuclear material, but the constancy of size, eccentric position in the red cell and the fact that only one is usually found in an erythrocyte seem to argue for their being a definite structure. Also they may be found in nucleated red cells in which the nucleus is still round and unbroken.

The Howell-Jolly body is found in man in small numbers in some cases of pernicious anemia, acute severe secondary anemia, hemolytic icteroanemia, sickle cell anemia and leukemia, in most cases of which diseases there is active red cell production going on. In none of these conditions are Howell-Jolly bodies apt to be as numerous as after splenectomy. It is known that they persist after erythropoiesis has returned to normal;

From the Medical Clinic, Hospital of the University of Pennsylvania.

1. Pepper, O. H. Perry, and Austin, J. Harold: Metabolism Studies Before and After Splenectomy in a Case of Pernicious Anemia, Arch. Int. Med. **18**: 131 (July) 1916.

2. Dawson, Lord of Penn: Indications for and Result of Removal of the Spleen, Brit. M. J. **2**: 699, 1932.

3. Diamond, L. K.: Indications for Splenectomy in Childhood; Results in 52 Operated Cases, Am. J. Surg. **39**: 400 (Feb.) 1938.

4. Pemberton, J. deJ.: Splenectomy: Indications and Results, South. Med. & Surg. **102**: 46 (Feb.) 1940.

5. Rousselot, L. M.: Role of Congestion (Portal Hypertension) in So-Called Banti's Syndrome: Clinical and Pathologic Study of 31 Cases with Late Results Following Splenectomy, J. A. M. A. **107**: 1788 (Nov. 28) 1936.

6. Eliason, E. L., and Stevens, L. W.: Surgery of the Spleen in Blood Dyscrasias, Surgery **13**: 177 (Feb.) 1943.

7. Howell, W. H.: The Life History of the Formed Elements of the Blood, Especially the Red Corpuscles, J. Morphol. **4**: 57, 1890.

8. Jolly, J.: Sur la formation des globules rouges des mammifères, Compt. rend. Soc. de biol. **18**: 528 and 593, 1905.

9. Schmauch, G.: Ueber endoglobuläre Körperchen in den Erythrocyten der Katze, Virchows Arch. f. path. Anat. **156**: 201, 1899.

10. Morris, R. S.: Note on the Occurrence of Howell's Nuclear Particles in Experimental Anemia of the Rabbit and in Human Blood, Bull. Johns Hopkins Hosp. **18**: 198, 1907.

but the reason for their occurrence is not known. Probably identical bodies are found in the erythrocytes of many animals during periods of active blood regeneration and especially after phenylhydrazine or pyrodine poisoning.

It may be said that the finding of Howell-Jolly bodies in an otherwise normal blood is a very strong indication of the absence of the spleen. Some day a case should be discovered in which splenic destruction, perhaps by traumatic intracapsular hemorrhage, has taken place. It will be interesting to learn whether Howell-Jolly bodies will appear in such a case just as they do after removal of the spleen. In the present state of our ignorance concerning the functions of the spleen, we may conclude that in man, in whom the reservoir function of the spleen is almost negligible, the occurrence of Howell-Jolly bodies is the only evidence commonly demonstrable of a loss of splenic function.

BILATERAL CORTICAL NECROSIS OF THE KIDNEYS FOLLOWING SEVERE BURNS

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When Duff and Murray[1] collected 71 instances of bilateral cortical necrosis of the kidneys in 1939 they encountered no patient in whom burns had been a predisposing factor. In most deaths from burns pathologic condition of the kidneys has been described as tubular degeneration and intense vascular stasis.[2] Necrotic foci in the kidney presumably from direct action of a toxin, and hemoglobin deposition in the tubules from erythrolysis are also described as evidence of more severe damage.[3] Evidence of still greater renal involvement of a vascular nature is embodied in the following report of bilateral symmetrical cortical necrosis of the kidneys following extensive cutaneous burns:

REPORT OF CASE

History.—A woman aged 32, a housewife, was admitted to Watts Hospital immediately after suffering severe burns when her nightgown caught on fire. No further history was available except that she had three children, the youngest child 1 year old. Her pregnancies and deliveries were uneventful.

Physical Examination.—On admission the temperature was 99.6 F., the pulse rate 84 and the respiratory rate 20 per minute. The patient was in profound shock but was conscious. The blood pressure was imperceptible. Burns of second and third degree involved the skin over the anterior surface of both thighs, the anterior and right lateral aspect of the abdomen, portions of the chest anteriorly and the inner aspects of the arms, forearms and hands. Burns of this degree comprised about 30 per cent of the total body surface, while about them an additional 10 per cent was the site of first degree burns. A detailed physical examination was not carried out because of the obvious nature of the injury and the critical condition of the patient. The extent of the burns on the extremities discouraged the intern from taking numerous blood pressure readings. Her general appearance was one of good nutrition.

Laboratory Examination.—On the day of admission the red blood count was 6,350,000 with 17.5 Gm. of hemoglobin per hundred cubic centimeters (101 per cent). The white blood cell count was 3,300 with 87 per cent neutrophils, 11 per cent lymphocytes and 2 per cent monocytes. The hematocrit reading was 61 volumes per cent. The urine contained a trace of albumin. Catheterized urine specimens on the third, fourth and fifth days contained a cloudy to semisolid albumin, were loaded with white blood cells and had from a few to 45 red blood cells per high power field. On one occasion there were a few leukocytic casts. No crystals were found in any specimen. On the fourth hospital day the blood nonprotein nitrogen was 165 mg. per hundred cubic centimeters, urea nitrogen 100 mg., urea 214 mg., creatinine 4.2 mg., uric acid 5.7 mg., dextrose 153 mg., chlorides 450 mg. and sulfadiazine 20 mg. per hundred cubic centimeters. The hematocrit reading at this time was 38 volumes per cent.

Course.—The patient was given 500 cc. of blood plasma in the emergency room and another 250 cc. about twelve hours later. The burned areas were debrided and sprayed with a 2.5 per cent solution of sulfadiazine in triethanolamine. Throughout the first twenty-four hours the areas were sprayed with the sulfadiazine solution every hour and then every two hours for the next forty-eight hours. On the day of admission she received 6,600 cc. of fluid by mouth and 1,400 cc. by vein in addition to the plasma. One hour following admission 300 cc. of urine was removed by catheter and no more urine was passed that day. She lost approximately 300 cc. by emesis. On the second day the fluid intake was 5,200 cc. and the urinary output was only 40 cc. by urethral catheter. The third day intake was 3,500 cc. and the output was 35 cc. of urine. The fourth day intake was 3,000 cc. and the output was 15 cc. The fifth day intake was 2,300 cc. and the output was 35 cc. General treatment consisted of symptomatic use of opiates for pain and various stimulants. On the fourth day a transfusion of 500 cc. of citrated blood was given without reaction. The temperature rose to 102 F. on the second day, dropped to normal on the third day and then gradually rose again to 101 F. on the sixth day. The pulse climbed steadily from 84 beats per minute on admission to 154 on the sixth day. The respirations increased during the fifth and sixth days to 28 per minute. The blood pressure could not be obtained on three attempts during the first day. On the second day the only pressure obtained was 70 mm. of mercury systolic and zero diastolic. No further recordings were made, but after the second day the patient did not appear to be in shock and was fully conscious, cooperative and reasonably comfortable. During the ensuing three days it became apparent that she was developing progressive renal insufficiency and on the night of the fifth day she became irrational and semicomatose. On the sixth day respirations became very labored, dark frothy fluid appeared at the nose and mouth and she died.

POSTMORTEM EXAMINATION

The burns appeared as previously described. They were covered by a thick crust, which was dry, clean and apparently free of infection. The body was opened with the usual Y incision.

The pleural cavities were normal. The right lung weighed 500 Gm. and the left 410 Gm. Each on cut section was moderately congested.

The pericardial cavity was negative. The heart weighed 275 Gm. and appeared grossly normal. The aorta was of good elasticity and showed only a few atheromatous plaques in the abdominal portion.

The abdominal cavity was normal. The stomach was much distended with dark fluid and gas. The gastrointestinal tract was congested throughout but was otherwise not remarkable. The liver weighed 1,885 Gm. and the cut surface appeared slightly opaque. The gallbladder wall was thin and the bile ducts were patent. The spleen weighed 170 Gm. and was moist and dark. The right kidney weighed 180 Gm. and the left kidney 175 Gm. The appearance of the two kidneys was similar. The capsule was thin and stripped with ease. The surface was mottled with confluent large and small reddish gray opaque areas. These constituted about one half the surface of the kidney. The intervening tissue was pale grayish pink and glistening. The cut surface showed the same confluent grayish yellow opaque foci with hemorrhagic edges limited to the cortex and columns of Bertini (fig. 1). The medulla contained distinct striations. The pelves of the kidneys were not remarkable and contained no crystals or concretions.

Microscopic Examination.—Sections of the lung revealed pronounced capillary engorgement with dilatation of the arteries and veins. The alveoli contained a few pigment bearing phagocytes.

The heart appeared normal except for capillary engorgement and numerous small areas of interstitial hemorrhage.

From the Department of Laboratories, Watts Hospital, Durham, N. C., and the Department of Pathology, University of North Carolina, Chapel Hill.

1. Duff, G. L., and Murray, E. G. D.: Bilateral Cortical Necrosis of the Kidneys, Am. J. M. Sc. **201:** 428 (March) 1941.
2. Vogt, W.: Ueber histologische Befunde beim Verbrennungstod, Virchows Arch. f. path. Anat. [illegible] 140, 1929.
3. Pack, G. T.: The Pathology of Burns, Arch. Path. & Lab. Med. **1:** 767 (May) 1926.

Section of the stomach showed engorgement and dilatation of the arteries, veins and capillaries.

Several sections of liver showed only one minute circumscribed area of early necrosis of the hepatic cells with pyknotic nuclei and loss of cell outline. Elsewhere numerous mitoses were observed in many of the liver cells. Some of the large branches of the portal vein were filled with an amorphous material consisting chiefly of fibrin and red blood cells.

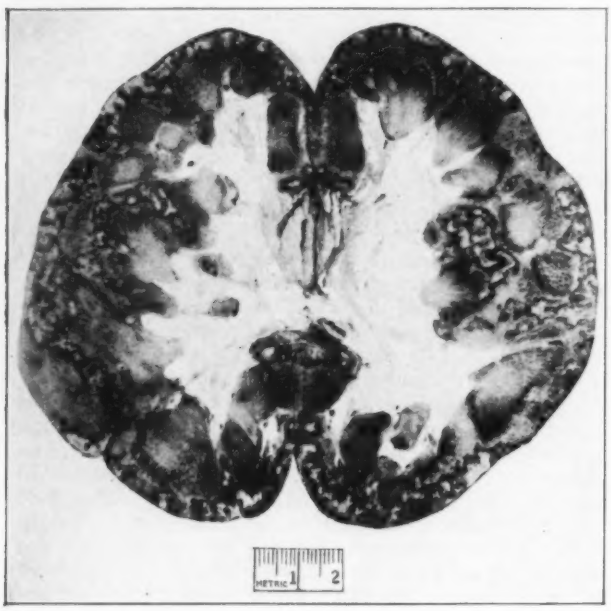

Fig. 1.—Gross appearance of kidney showing alternating zones of necrosis and hemorrhage limited to the cortex.

The spleen showed severe congestion of the sinusoids. The arteries and veins were dilated and engorged. One large vein contained a thrombus of fibrin, red blood cells and leukocytes. This did not fill the vessel, and free blood was seen in the lumen.

Sections of the kidneys revealed a widespread patchy necrosis involving almost the entire cortex. The necrosis in some areas appeared to be further advanced than in others. There was a thin strip of apparently normal tissue just beneath the capsule. In the most severely affected regions almost complete necrosis of the glomeruli and tubular epithelium with loss of the nuclei and blurring of the cell outlines was the outstanding feature. The structures, however, maintained a shadowy characteristic architecture. Hemorrhages and numerous polymorphonuclear leukocytes were scattered through the parenchyma. Most of the interlobular arteries and the arterioles were altered to an advanced degree. The muscular and elastic fibers of their distended walls were fragmented and opaque and were penetrated by minute hemorrhages. Platelet thrombi frequently filled portions or all of the dilated and sagging arteriolar lumens. These thrombi sometimes could be traced from an afferent arteriole into an engorged or necrosing glomerulus (fig. 2). Glomeruli in involved areas stained poorly, contained thrombi, were sometimes filled with masses of red cells in varying degrees of dissolution or were collapsed from apparent rupture. In regions adjoining the infarcted zones the arterioles and glomeruli were engorged but otherwise normal. The epithelium of the convoluted tubules was swollen, granular and in many places vacuolated. Larger arteries showed no changes similar to those noted in the smaller vessels. In many of them, however, there was thickening and reduplication of the internal elastica and fibrous thickening of the intima, a condition obviously antedating the present injury. Evidence of progressive renal circulatory stasis was adduced from the margination of the cellular elements of the blood. In the veins, partially occluding fibrin thrombi were noted. The collecting tubules were normal and contained no crystals. The intertubular capillaries were engorged. The picture was one of extensive vascular damage, infarction and tubular nephrosis.

The arteries and capillaries of the pancreas were dilated and packed with red blood cells. There were numerous areas of hemorrhage and fibrinous exudate in the interlobular connective tissue.

All the blood vessels of the adrenals were dilated and engorged, and there were several small areas of hemorrhage. Several veins contained nonoccluding fibrin thrombi. Sections of the thyroid and ovary revealed dilated arteries packed with red blood cells.

The bone marrow showed moderate hyperplasia of the myeloid elements and numerous megakaryocytes.

The burned areas of the skin showed complete loss or coagulation of the epidermis with extension in some areas for the full depth of the dermis. The blood vessels throughout this burned area and beneath it were dilated and packed with red blood cells. In none of numerous sections was a leukocytic exudate observed.

COMMENT

If urinary suppression in this patient can be taken to indicate the onset of severe renal vascular alterations, these changes are seen to coincide with the period of deep shock the first forty-eight hours after the burn. In fact Moon [4] considers that "the congestive, hemorrhagic and edematous visceral appearances after extensive burns are of the same pattern as those found after traumatic shock." This author also notes that massive necrosis of the liver and renal cortex have been observed as unexplained secondary effects of shock. The focal necrosis observed in the upper gastrointestinal tract (e. g., Carling's

Fig. 2.—Section showing arteries dilated and their walls necrotic; thrombus in one artery and in an afferent arteriole; glomerulus necrotic.

ulcer) in patients in severe shock have been attributed to arteriolar spasm by Penner and Bernheim.[5] It is an interesting coincidence that Duff and Cooper implicate spasm of the interlobular arteries and arterioles followed by atony as the etiologic mechanism compatible with the majority of cases of bilateral cortical symmetrical necrosis of the kidneys reported in the

4. Moon, V. H.: Shock: Its Dynamics, Occurrence and Management, Philadelphia, Lea & Febiger, 1942.

5. Penner, Abraham, and Bernheim, Alice C.: Acute Postoperative Esophageal, Gastric and Duodenal Ulcerations, Arch. Path. 28: 129 (Aug.) 1939.

literature. The stimulus for this spasm might be a physiologic compensatory factor against shock acting either directly on the vessel wall (hyperadrenalinemia) or via nerve elements or might be a substance elaborated at the burn site. It is, however, beyond the scope of 1 case report to decide whether these renal changes developed according to the foregoing explanation or as the result of a direct toxic (necrotizing) action of a burn product on the vessel wall.

The formation of thrombi is probably not the first step in the process, although vascular injury from anoxia, stasis and the likely increase in circulating platelets and burned tissue products may act to favor this. The process does not appear to be embolic, since well defined thrombi cannot be seen in the engorged vessels at the burn site nor are emboli seen in the lung capillaries. Moon states that the coagulation time of the blood in shock is prolonged and in burns is shortened at first, then lengthened. Zinck [6] in summarizing the vascular changes in 8 cases of burns emphasizes endothelial damage with fibrin thrombus formation and mentions renal panarteritis.

The use of sulfadiazine sprays in our case deserves some comment. The prompt elevation of the blood level to 20 mg. per hundred cubic centimeters after dermal application indicates that burned skin is no barrier to its absorption. It also introduces the possibility that the drug may have caused the anuria, although it is much more likely that the anuria antedated the time when an effective concentration of sulfadiazine was reached. The renal changes described by Hellwig and Reed [7] in a fatal case of sulfadiazine anuria include advanced tubular damage and the deposition of sulfadiazine crystals in the tubules. Coexistent vascular changes were not noted. Other elements in the therapy of our patient such as plasma, blood transfusion without obvious reaction, and triethanolamine have not been shown to produce similar renal pathologic condition.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1942, p. 150).

The following dosage form has been accepted:

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Tablets Sulfathiazole: 0.5 Gm. (7.7 grains).

PITRESSIN TANNATE IN OIL.—A suspension in vegetable oil of a water insoluble tannate of the pressor and diuretic-antidiuretic principle of the posterior lobe of the pituitary gland (beta-hypophamine) standardized to contain five pressor units in each cubic centimeter (one unit representing the pressor activity exhibited by 0.5 mg. of standard powdered pituitary U. S. P.). It is standardized by the method of Hamilton and Row (*J. Lab. & Clin. Med.* **2**:120 [Nov.] 1916).

Actions and Uses.—Pitressin tannate in oil is recommended for use where the prolonged action of pitressin is desired, particularly for the treatment of patients suffering from diabetes insipidus.

Dosage.—From 0.3 to 1 cc. (3 to 5 pressor units) intramuscularly, *never intravenously,* at intervals of from thirty-six to forty-eight hours.

PARKE, DAVIS & COMPANY, DETROIT

Ampoules Pitressin Tannate in Oil: 1 cc. Each cubic centimeter contains pitressin tannate equivalent to 5 pressor units, in peanut oil suspension.

U. S. patent 1,960,493 (May 29, 1934; expires 1951). U. S. trademark 254,507.

6. Zinck, K. H.: Burns: Vascular and Organic Changes, Klin. Wchnschr. **17**: 278 (Feb. 19) 1938.
7. Hellwig, C. A., and Reed, H. L.: Fatal Anuria Following Sulfadiazine Therapy, J. A. M. A. **119**: 561 (June 13) 1942.

THEOPHYLLINE WITH ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1942, p. 332).

The following additional dosage forms have been accepted:

THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Ampoule Solution Aminophyllin: 0.25 Gm. (3¾ grains) in 10 cc.

Ampoule Solution Aminophyllin: 0.5 Gm. (7.5 grains) in 2 cc.

NICOTINIC ACID (See New and Nonofficial Remedies, 1942, p. 561).

The following dosage forms have been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tabloid Nicotinic Acid: 50 mg. and 100 mg.

THIAMINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1942, p. 555).

The following dosage forms have been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tabloid Thiamine Hydrochloride: 1 mg., 5 mg. and 10 mg.

Hypoloid Solution Thiamine Hydrochloride, 10 mg. per cc.: 25 cc. vials. Preserved with phenol 0.5 per cent.

Hypoloid Solution Thiamine Hydrochloride, 50 mg. per cc.: 5 cc. and 25 cc. vials. Preserved with phenol 0.5 per cent.

ASCORBIC ACID (See New and Nonofficial Remedies, 1942, p. 564).

The following dosage forms have been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tabloid Ascorbic Acid: 25 mg. and 100 mg.

COD LIVER OIL (See New and Nonofficial Remedies, 1942, p. 572).

The following dosage form has been accepted:

BAY STATE LABORATORIES, INC., BOSTON

Cod Liver Oil: 4 ounce bottles. Each gram contains 2,500 U. S. P. units of vitamin A and 125 U. S. P. units of vitamin D.

DIETHYLSTILBESTROL (See Supplement to New and Nonofficial Remedies, 1942, p. 26).

The following dosage forms have been accepted:

THE WM. S. MERRELL COMPANY, CINCINNATI

Diethylstilbestrol (in corn oil), 1 mg. per cc.: 20 cc. vial containing 0.5 per cent chlorobutanol.

Tablets Diethylstilbestrol: 1.0 mg. and 0.2 mg.

THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Tablets Diethylstilbestrol: 0.1 mg., 0.5 mg. and 1 mg.

Ampuls Diethylstilbestrol (in peanut oil), 0.5 mg. per cc.: 1 cc.

Ampuls Diethylstilbestrol (in peanut oil), 1 mg. per cc.: 1 cc.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1942, p. 234).

The following dosage forms have been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Ephedrine Hydrochloride *(Powder):* ½ and 1 ounce bottles.

Tabloid Ephedrine Hydrochloride: 0.016 Gm. (¼ grain) and 0.032 Gm. (½ grain).

Hypoloid Ephedrine Hydrochloride Injection: 30 mg. (approximately ½ grain) in 1 cc.

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Capsules Ephedrine Hydrochloride: 25 mg. (⅜ grain) and 50 mg. (¾ grain).

EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1942, p. 235).

The following dosage forms have been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Ephedrine Sulfate *(Powder):* ½ and 1 ounce bottles.

Hypoloid Ephedrine Sulfate Injection: 0.049 Gm. (¾ grain) in 1 cc.

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SATURDAY, JULY 24, 1943

TREATMENT OF SURFACE BURNS

The treatment of burns is directed toward prevention of shock and care of the surface wound. Probably overemphasis has been placed on surface treatment to the neglect of shock and anoxia. Cope suggests that improvement in results which came with the introduction of tannic acid treatment was probably due to better care of early shock rather than to the ability of tannic acid to fix in situ tissue toxins produced by burns. Cope [1] reports the treatment of 39 patients brought to the emergency ward of the Massachusetts General Hospital from the Cocoanut Grove night club fire. A trial was given to the method in which treatment of shock and anoxia received first consideration, while treatment of the burned surface was simplified to the point of omission of débridement and cleansing. The treatment of the 39 patients consisted in application to the burned surfaces, without any preliminary débridement or cleansing, of sterile boric acid ointment strips secured in place by pressure bandages. Intravenous administration of plasma was begun as soon as possible, in many instances while the patient was still on the stretcher. Two Gm. of sodium sulfadiazine was administered at once through the cannula or the needle already in place for plasma transfusion. The dressings were not changed until the fifth to the tenth day. Débridement was not practiced because it was believed that the intact epidermis over the blebs protects against the entrance of bacteria and because bleb fluid does not become contaminated by virulent organisms harbored in gland crypts. Cleansing was considered undesirable because it does not reduce significantly the number of contaminated organisms present unless vigorous scrubbing is resorted to, in which case viable epithelium is injured. The procedure of débridement and cleansing, it is pointed out, involves increased manipulation of the patient, prolonged exposure of the wounds and a general anesthetic, all of which are conducive to shock.

Cultures of fluid removed under sterile precautions from blebs twenty-four hours to fourteen days old were taken in the laboratory of Dr. Lyons. In a few instances nonpathogenic saprophytes of normal skin were recovered. It was the clinical impression that the healing beneath the ruptured blebs occurred as rapidly as under any of the other agents commonly recommended for the burned surfaces. Another argument in favor of nondébridement of the burned wound is the availability to the wound of chemotherapeutic agents administered internally. Thus the level of the sulfonamides in the bleb fluid of unruptured vesicles followed closely that of the blood plasma, at least on the first few days. The sulfonamide treatment adequately controlled invasive infection. According to Lyons [2] there was no evidence in these cases of cellulitis, lymphangitis, lymphadenitis or bacteremia. Superficial burns healed in the usual ten to fourteen day period.

The striking feature of the infection which occurred in all the deep burns was its limitation to the tissue devitalized by the original thermal injury. The treatment appeared sufficient to confine the bacterial infection to the devitalized tissue and to protect the living cells from invasive infection or pronounced local necrosis. The advantage of the treatment is its simplicity. The available personnel in an emergency of this type is freed for the care of shock and anoxia.

1. Cope, Oliver: The Treatment of the Surface Burns, Ann. Surg. **117:** 885 (June) 1943.

THE SHOCK THERAPY OF MENTAL DISEASE

For some time shock therapy has occupied the center of psychiatric interest. It is practiced to greater or lesser extent in three hundred and five hospitals for mental diseases, public and private.[1] Many questions with regard to its therapeutic values under various conditions are still to be answered; in fact, psychiatrists are far from agreement as to its methods, indications and results. Lewis [2] points out that the facts needed to evaluate shock therapy properly are not yet available in spite of its extensive clinical use. The results published appear to be discordant. The statistics reveal a rather chaotic state of affairs. To quote Lewis, "there is as yet no consensus of the basic value of any of these treatments [insulin, metrazol, electric currents and other shock producers], some authors being very enthusiastic over their results, others being unconvinced

2. Lyons, Champ: Problems of Infection and Chemotherapy, Ann. Surg. **117:** 894 (June) 1943.

1. Kolb, Lawrence, and Vogel, V. H.: The Use of Shock Therapy in 305 Mental Hospitals, Am. J. Psychiat. **99:** 90 (July) 1942.

2. Lewis, N. D. C.: The Present Status of Shock Therapy of Mental Disorders, Bull. New York Acad. Med. **19:** 227 (April) 1943.

of favorable results, and still others expressing frank opinions on the inadequacy and even harmfulness of such procedures."

Lewis, however, does not hesitate to admit that insulin, metrazol and electric shock are all valuable in proper hands when supplemented with systematic psychotherapy and other measures available in psychiatric clinics. The discordant reports on the results of shock therapy seem to be explainable as due, at least in large part, to lack of uniform standards in the selection of patients for treatment, in the technic of treatments and in the interpretation of the results. Thus, statistics on the results of insulin treatment of schizophrenia, to be of value for comparative and other purposes, must be based on accurate information as to the form of the disease in each case—there are different forms of this disease—as to the special characteristics of the individual patient and as to the criteria used in recording the results as "recovered," "socially recovered," "improved," "unimproved" and so on. Considerations of this kind apply to other forms of mental disease subjected to shock treatment.

Lewis also admits that the many published reports, as well as the survey by Kolb and Vogel [1] on shock practices in three hundred and five mental hospitals and clinics, do indicate approaches toward agreement as to the kind of shock treatment best suited for different types of amenable mental disease. Insulin appears to be the choice for schizophrenia or dementia precox and convulsive methods (metrazol and electric current) for affective disorders and involutional melancholia. The field of usefulness of electrically induced convulsion therapy, "a safe and convenient method of treatment in mental diseases," appears to be extending. Selinsky [3] emphasizes its value in making the patient more accessible to psychotherapy. He states that "there can be no doubt of the empirical fact that electroshock therapy is an important contribution to the art and science of mental healing."

Shock therapy has been, and is, a mighty stimulus to psychiatry. As Lewis says, "the whole realm of psychiatry has been vitalized with renewed interest." While no explanation of the fundamental nature of shock reactions can be offered now, has not the time come when their therapeutic actions need to be studied on a well organized, cooperative, national and later perhaps international basis in order that shock therapy may be used to the best advantage in the treatment of mental disease?

3. Selinsky, Herman: The Selective Use of Electro-Shock Therapy as an Adjuvant to Psychotherapy, Bull. New York Acad. Med. **19**: 245 (April) 1943.

Current Comment

VITAMINS AND HUMAN GRAY HAIR

The production of achromotrichia in animals by dietary means and the alleviation of the experimentally produced condition by inclusion in the diet of pantothenic acid or some other vitamin of the B complex led to the hope that similar factors might be effective in restoring the original color to gray hair in man. Some studies have suggested that administration of para-aminobenzoic acid or a preparation containing pantothenic acid is followed by darkening of previously gray hair in man.[1] In view of the widespread publicity given to so-called anti-gray hair factors and of newspaper advertising promoting the sale of calcium pantothenate to persons with gray hair, a recent report by Brandaleone, Main and Steele [2] is of particular interest. These workers carried out an investigation designed to determine more carefully the degree of change in gray hair to be expected after prolonged administration of calcium pantothenate and para-aminobenzoic acid. Vitamin preparations were administered for eight months to a group of elderly men and women with white or graying hair who were confined to the hospital with chronic diseases such as rheumatoid arthritis, general arteriosclerosis and parkinsonism. Of the group of 19 patients 7 received 100 mg. of calcium pantothenate, 200 mg. of para-aminobenzoic acid and 50 Gm. of brewers' yeast daily; 5 received yeast and para-aminobenzoic acid, and 7 yeast and calcium pantothenate. Three methods for judging change in hair color were used: (1) photographs were taken before, during and at the end of medication, (2) samples of hair were clipped from a given area at the time the pictures were made and (3) all patients were seen by the same two observers at least twice a month and notes taken of any change observed. Photographs were found to be useless; slight changes in distance or lighting made considerable difference in the apparent color of the hair. The subjective opinions were claimed to be more accurate than photographs and less discouraging than hair samples. Several changes were noted in the hair of the treated subjects. The most common was the appearance of a yellow or greenish cast to the gray hair. Growth of scattered wiry black hair also became apparent. In several patients there was thought to be greater luster without change in color. In only 2 patients, however, was there unequivocal change in color. Both were men with brown hair and the change tended toward a return to the original color. This change became apparent after the drugs (the subjects received both calcium pantothenate and para-aminobenzoic acid) had been administered daily for a period of two to three months and increased slowly in intensity until the experiment was terminated. Whether or not comparable observations will be made when younger people with gray or graying hair are studied remains

1. Sieve, B. F.: Clinical Achromotrichia, Science **94**: 257 (Sept. 12) 1941.

2. Brandaleone, Harold; Main, Elizabeth, and Steele, J. M.: Effect of Calcium Pantothenate and Para-Aminobenzoic Acid on the Gray Hair of Humans, Proc. Soc. Exper. Biol. & Med. **53**: 47 (May) 1943.

to be determined. It is already apparent, however, that much of the publicity concerning anti-gray hair factors has left a distorted impression with regard to the ability of compounds to restore the original color to gray hair in man.

THE QUINACRINE-CALCIUM THERAPY OF TYPHUS

The April 1942 issue of the *Deutsche Militärarzt* contained a communication by van Meerendonk [1] concerning his experience with quinacrine therapy in 80 cases of spotted typhus. The effect of this therapy was superior to that which he had observed in a group of 300 cases of typhus treated variably with azosulfamide, aminopyrine, neoarsphenamine and convalescent serum. Under quinacrine therapy a lytic fall in temperature took place in from three to five days, and in typical cases the temperature returned to normal in from eight to ten days. The eruption showed little tendency to spread or to assume a hemorrhagic character. Quinacrine was especially effective for patients past 40 years of age. The author was particularly impressed with the results in 7 cases in which a combination of quinacrine and plasmochin was employed. Occasional failure to reduce the fever within several days was usually due to complicating bronchopneumonia, which was readily controlled by intravenous administration of sulfapyridine. However, in a subsequent report van Meerendonk [2] stated that his results with quinacrine and plasmochin in a group of 225 cases were rather disappointing; in fact, he has gained the impression that quinacrine therapy aggravated the cerebral symptoms, such as the delirium, the epileptiform attacks and the chorea-like and pseudobulbar paralytic manifestations. All these symptoms suggested a state of tetany. Patients became afebrile under the treatment but died three to four days later with symptoms of cerebral involvement. Postmortem examinations revealed in most cases the usual picture of encephalitis of spotted typhus. Estimation of the blood calcium content of typhus patients revealed values as low as 6 mg. per hundred cubic centimeters. Van Meerendonk therefore concluded that calcium deficiency was an important factor in the morbidity of typhus and that there was a definite relationship between the low blood calcium and the lesions of the vascular and capillary systems. The fall in the blood pressure, so characteristic of this disease, is probably likewise dependent on the fall in the blood calcium. Quinacrine-calcium therapy of a group of typhus patients aged between 20 and 40 resulted in a prompt fall in the temperature, limitation of the eruption and maintenance of normal blood pressure. Restlessness and tremors were not observed and there were no fatalities. The author is under the impression that the quinacrine-calcium therapy acts as a specific. The treatment consisted in the administration of one tablet of quinacrine hydrochloride 0.1 Gm. three times daily and of the daily injection of 10 to 20 cc. of a 20 per cent solution of calcium gluconate or of a 10 per cent solution of calcium chloride. In severe cases as much as 40 cc. of one of these solutions was given daily. The number of cases in this last group is not stated, the communication being in the nature of a preliminary report. No definite opinion, therefore, as to the specificity or, indeed, the effectiveness of this therapy can be ventured until further experiences with it are reported.

1. van Meerendonk, Piet: Erfahrungen über Fleckfieberbehandlung mit Atebrin und Plasmochin, Deutsche Militärarzt **7**: 283 (April) 1942.
2. van Meerendonk, Piet: Erfahrungen über Fleckfieberbehandlung mit Atebrin und Calcium, Deutsche Militärarzt **7**: 541 (Sept.) 1942.

PUBLICATIONS OF COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry has just issued new editions of four books, New and Nonofficial Remedies, Epitome of the U. S. Pharmacopeia and National Formulary, Useful Drugs and Reports of the Council. Each of these is a valuable aid to the physician. New and Nonofficial Remedies 1943, an official annual publication of the Council, contains descriptions of proprietary and nonproprietary preparations acceptable under the Council's rules with information concerning composition, actions, indications, dosage and cautionary measures. This volume also sets forth the rules of the Council on which acceptability of products is determined and includes a bibliographic index to unaccepted preparations considered by the Council. The seventh edition of the Epitome is designed to include information from the U. S. Pharmacopeia and National Formulary which may be useful to physicians. It contains a brief discussion of the actions, uses and dosage of each drug in U. S. P. XII and N. F. VII. Items that are considered to be without therapeutic value are commented on adversely in the Epitome. Useful Drugs, now in its thirteenth edition, was prepared to supply the demand for a selected materia medica. The present volume brings the selection up to date. It is composed of a list of drugs of proved efficacy with a discussion of pharmacologic action, therapeutic uses, dosage and methods of administration. A cross section of a year's work of the Council on Pharmacy and Chemistry is available from the 1942 annual reprint of its reports. Many of the functions of this group are well known, but this book brings out details of some of the more inconspicuous but equally meritorious activities of the Council and supplies a more thorough understanding and new appreciation of the Council's progress and accomplishments. It contains reports originally published in THE JOURNAL such as preliminary discussions of new developments in therapeutics and timely articles on the status of recognized agents and reports of omission or rejection of products from New and Nonofficial Remedies. It also offers a record of current decisions on matters of Council policy. Each one of the publications of the Council has its own distinct purpose. All have the single aim of developing the standards of medical education and the practice of medicine to their highest levels. With the appearance of these publications the Council again makes a valuable contribution to rational therapeutics.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

MEDICAL OFFICER BAILS OUT AT 40,000 FEET

A parachute jump from 40,200 feet was made by Lieut. Col. William Randolph Lovelace 2d near Euphrata, Wash., on June 24 to test oxygen equipment developed under his supervision for the Office of the Air Surgeon, Army Air Forces, the War Department announced on June 30. It was his first parachute jump.

Colonel Lovelace, 35 year old chief of the aeromedical laboratory at Wright Field, Dayton, Ohio, bailed out into air registering a temperature of 50 degrees below zero. He landed in a wheat field.

The bail out equipment consists of a small cylinder containing about twelve minutes' supply of oxygen sewn in the flier's clothing and connected to his mask by a tube. Fliers bailing out of a plane must disconnect their masks from the plane's regular oxygen supply. Since unconsciousness occurs within fifteen seconds without oxygen at 40,000 feet, the bail out equipment is necessary even to get out of the plane. Colonel Lovelace donned two parachutes and was clad in garments developed

Col. Walter S. Jensen, M. C. (left), executive officer, Office of the Air Surgeon; Brig. Gen. David N. W. Grant, M. C. (right), air surgeon, Army Air Corps, and Lieut. Col. William Randolph Lovelace 2d, M. C. (center).

at the parachute and clothing laboratory at Wright Field. The parachute on his back would open automatically as he jumped by a device attached to the plane. He wore an emergency parachute on his chest. The blast of air and sudden jerk of the parachute tore the thick outer gloves from both hands and snapped off the thin inner glove on his left hand, leaving it bare in quickly freezing temperature.

The parachute's opening jerk caused him to black out. He was fully revived by the time he reached 8,000 feet and landed down with no injury except the frozen left hand. The present bail out equipment was found to be highly efficient.

Colonel Lovelace graduated from Washington University, St. Louis, in 1930 and from Harvard Medical School in 1934. He received the degree of master of science in surgery from the University of Minnesota and was a member of the surgical staff of the Mayo Clinic before coming on duty with the Army Air Forces on Feb. 15, 1942. He is president of the Aero Medical Association of the United States and a co-winner of the Collier trophy for research in aviation medicine in 1941. He has engaged in research in high altitude flying since 1938.

EVACUATION OF WOUNDED AND TRANSPORTATION OF HOSPITALS BY AIRPLANE

The Army Air Forces School of Air Evacuation at Bowman Field, Kentucky, has now been established as a permanent installation, the War Department announced on July 8. This paves the way for expansion of the program for training nurses, enlisted men and flight surgeons for air evacuation duty. About 50,000 men who were disabled by wounds or illness have been transported in air ambulances.

The first class of air evacuation nurses was graduated from the school at Bowman Field on February 18, and three additional classes have since completed the course.

The program, planned by Brig. Gen. David N. W. Grant, the Air Surgeon, has proved that all types of wounded men can be carried by air. Aboard each of the airplane ambulances is either a flight surgeon or an army nurse, and also one noncommissioned officer of the Medical Department. The Army transports are easily converted from troop planes to flying hospitals, and some carry as many as 24 patients.

In New Guinea, 7,000 disabled men were evacuated in one month from Buna across the Owen Stanley Mountains to Port Moresby. Another 7,000 men were flown in, as well as a field hospital of 250 beds. A complete 25 bed hospital, including surgical equipment, supplies, beds and medicine, was flown from St. Louis to a base in Alaska in arrangement with the Air Transport Command, Army Air Forces, when fire destroyed a base hospital. In less than six days the hospital was completely installed and in operation.

AWARDED LEGION OF MERIT

The War Department announced on July 9 an award of the Legion of Merit to Brig. Gen. Paul R. Hawley, M. C., U. S. Army, for conspicuously meritorious conduct in the performance of exceptional service. As surgeon of the Special Army Observers Group, London, England, and later as chief surgeon of the European Theater of Operations from September 1941 to June 1942, General Hawley displayed remarkable professional ability, keen judgment and devotion to duty and rendered service of exceptional value to the government by planning all hospitalization and evacuation of United States Army Forces in the United Kingdom and maintaining supervision over the medical situation in the European theater of operations. General Hawley graduated from the University of Indiana and from the University of Cincinnati School of Medicine in 1914, from the Army Medical School in 1917, and received the degree of doctor of public health at Johns Hopkins University in 1923. He was commissioned first lieutenant in the medical corps of the regular army in 1917 and later was on the general staff corps eligible list.

The War Department announced on July 8 that Lieut. Col. John P. Bachman of the Army Medical Department has been awarded the "Legion of Merit" for "exceptionally meritorious service" in the Hawaiian Department. Colonel Bachman was cited for having operated continuously on casualties from the beginning of the Japanese attack on Pearl Harbor until 4:30 the next morning and then after only a brief rest resuming his surgical work. Colonel Bachman graduated from the University of Buffalo School of Medicine in 1926 and from the Army Medical School in 1928.——Col. Malcolm C. Grow, chief surgeon of the U. S. Army Eighth Air Force in England, has been awarded the Legion of Merit for having added a steel helmet to the "flak vest" which he developed to protect Ameri-

can fliers in combat. Colonel Grow graduated from Jefferson Medical College of Philadelphia in 1909, served in the national army during the first world war, and was commissioned in the regular army Medical Corps on July 1, 1920. He is also a graduate of the School of Aviation Medicine.

SPECIALTY TRAINING FOR MILITARY OFFICERS AT COLUMBIA

The War Department, Washington, D. C., has selected Columbia University as one of the universities to present intensive courses in the surgical specialties for the training of army medical and dental officers. The special courses at Columbia University vary from four to twelve weeks, and succeeding courses will be offered at least until Dec. 18, 1943, each course being given to from ten to thirty officers. The courses are in anesthesiology, neurosurgery, plastic surgery, surgery of the extremities and thoracic surgery. For Medical Corps officers only those are selected to enter the special courses in surgery who have had a minimum of one year's surgical residency following an internship or equivalent practical training; officers of the Dental Corps assigned to plastic surgery courses should have had a minimum of two years' training or practical experience in oral surgery. During the past academic year two hundred and forty-two medical and dental officers of the Army were assigned through the Surgeon General's Office, Army Air Forces, Army Ground Forces and the various service commands for training under the auspices of Columbia University College of Physicians and Surgeons.

WOMEN DOCTORS COMMISSIONED

At a ceremony on June 19 at First WAAC Training Center, Fort Des Moines, Iowa, Dr. Eleanor Gutman and Dr. Elizabeth Garber became officers in the Medical Corps of the Army of the United States, Dr. Gutman as a captain and Dr. Garber as a first lieutenant. They are the second and third ranking women in the corps, Major Margaret Craighill being the first (THE JOURNAL, May 22, p. 236). Serving with the Women's Army Auxiliary Corps at First WAAC Training Center, first in the capacity of contract surgeons and then as Women's Army Auxiliary Corps officers, the women physicians have been associated closely with the WAAC almost since its beginning. The bill allowing women doctors to serve in the Medical Corps of the Army passed Congress in May (THE JOURNAL, May 8).

Captain Gutman is the daughter of Dr. Abraham Gutman of New York. She received her B.A. degree at Smith College and her doctor of medicine degree at Yale University and served an internship and residency in the New Haven Hospital, New Haven, Conn. She maintained a private practice in internal medicine and gynecology in New York for eight years.

Lieutenant Garber is the daughter of Mr. and Mrs. E. C. Garber of Dunkirk, Ind. She received both her B.S. and M.D. degrees from the University of Indiana. She served a two and one-half years' internship and residency in pediatrics in the City Hospital at Indianapolis and then specialized in pediatrics at the University of Chicago for six months and was a resident at the Children's Memorial Hospital in Chicago when appointed a contract surgeon to practice at the Fort Des Moines Post Hospital. Both officers later were commissioned second officers in the WAAC. When the bill passed allowing women to serve officially in the Army Medical Corps, each applied for a commission.

CAPTAIN MILLER A PRISONER OF THE JAPANESE

Capt. Edward S. Miller, M. C., A. U. S., has recently been reported a prisoner of war of the Japanese government in the Philippine Islands. Captain Miller graduated from Emory University School of Medicine, Atlanta, Ga., in 1938, and was stationed at Fort William McKinley in the Philippine Islands when the Japanese attacked and later was on Bataan. His home is in Murphy, N. C.

HONORABLY DISCHARGED

The Westchester (New York) Medical Bulletin for July notes that Dr. Lester Wartels of New Rochelle was recently retired from active service as a captain in the Army Medical Department following a surgical operation and has been appointed assistant city physician to succeed Dr. Raymond Shea, who is on active duty in the Army. The position of assistant city physician is actually held, it is said, by Lieut. Col. Robert Lateiner, who is on leave for service with the Army.

As a result of an operation performed last fall, Dr. Frank D. Carroll of Rye has received an honorable discharge from the Army Air Forces, having held a commission as captain in the Medical Corps.

Dr. Hyman Millman of Mohegan Lake was retired from the Army, it is said, effective June 29, after having suffered an injury to his spine in line of duty.

Dr. Jerome Engle of Yonkers, who has been honorably discharged, has returned to private medical practice after two years' service with the Army. He was given a dinner recently by a number of his colleagues in Yonkers.

THE WINTER GENERAL HOSPITAL

The 1,777 bed U. S. Army Winter General Hospital at Topeka, Kan., was dedicated on May 22. Among the speakers at the ceremonies were the governor of the state, Hon. Andrew F. Schoeppel; Major Gen. Frederick E. Uhl, commanding general of the Seventh Service Command; Lieut. Col. Waldo B. Farnum, chief of the Medical Service of Winter General Hospital, and Major Samuel T. Whitebread of the United States Corps of Engineers, who formally delivered the hospital to the medical department.

The hospital, which is of the one story type in which the units are joined by enclosed runways, has the finest equipment obtainable for the care of the sick and wounded. The standard wards have 33 beds and the combination wards ten private rooms and 16 ward beds. There are four closed wards for patients with mental disturbances. The dining rooms are of the cafeteria style. The hospital has a beautiful chapel and auditorium and an automatic fire alarm and sprinkler equipment in each building in addition to the usual manual fire control system. At present three hundred civilians, forty-five nurses, thirty medical officers, fifteen medical administrative officers, five dental officers, two sanitary corps officers, two chaplains and others in addition to seven hundred medical detachment men and forty quartermaster soldiers comprise the personnel.

The hospital is named in honor of the late Brig. Gen. Francis Anderson Winter of Louisiana, who served in the first world war as surgeon in the lines of communication in France and later as chief surgeon of our forces in England. His widow was present at the dedication ceremonies.

A plan of naming the important clinics, buildings and streets after distinguished deceased officers of the Army has been followed. There is the Woodward Laboratory, named in honor of Lieut. Col. Joseph J. Woodward (1833-1884) of Pennsylvania, a pioneer in photomicrography and a former President of the American Medical Association; the Fletcher Medical Library, named in honor of Col. Robert Fletcher (1823-1912) of the District of Columbia, first editor of the *Index Medicus;* Eustis Road, named in honor of Surgeon William Eustis (1753-1825) of Massachusetts, who served as a medical officer during the Revolution and became Secretary of War in President Jefferson's cabinet and member of Congress and governor of Massachusetts; Myer Road, named in honor of Brig. Gen. Albert James Myer (1828-1880) of New York, distinguished field surgeon and student of military communication systems, founder of the Signal Corps and first chief signal officer of the Army and father of the Weather Bureau, and the William Brown Pharmacy, named in honor of Physician General William Brown (1748-1792) of Virginia, author of the first American Pharmacopeia.

The commanding officer is Col. John W. Sherwood of the medical corps, a native of Maryland, who was commissioned in the Army in 1909 and before coming to the Winter General

Hospital was department surgeon in the Panama Canal Zone. The executive officer is Lieut. Col. Milford T. Kubin of the Army Medical Department, who formerly lived in McPherson, Kan. The chief of the medical service is Lieut. Col. Waldo B. Farnum, formerly of New York; of the surgical service, Lieut. Col. Daniel L. Yancey, formerly of Springfield, Mo.; chief of the laboratory service, Major Hugh G. Grady, formerly of Drexel Hill, Pa.; chief of the x-ray service, Major Raphael Pomeranz, formerly of Newark, N. J.; chief of the dental service, Lieut. Col. Henry R. Sydenham, formerly of Coleman, Texas, and the hospital surgeon is Major Galen A. Rogers, formerly of Talihina, Okla. The following officers are assigned to the various services:

MEDICAL SERVICE

Major Forrest Anderson, Van Nuys, Calif.
Major Sam Phillips, Little Rock, Ark.
Major George Robson, San Francisco.
Major Nathaniel Uhr, New York.
Capt. Max Berkovsky, New York.
Capt. Henry Gahan, Winchester, Mass.
Capt. Max Magnes, Sea Gate, N. Y.
Capt. Meyer G. Miller, Wilmington, Vt.
Capt. Millard T. Peterson, Atlantic, Iowa.
Capt. Isadore Schapiro, Brooklyn.
Capt. George Skura, Brooklyn.
1st Lieut. Thomas G. Ahearn, Chicago.

SURGICAL SERVICE

Major Charles Alexander, Houston, Texas.
Major Sidney Bernstein, Brooklyn.
Major Ralph B. Mullenix, San Diego, Calif.
Major Matthew Peelen, Kalamazoo, Mich.
Major Walter A. Reese, Middletown, Ohio.
Capt. Orrin Anderson, Clifton Springs, N. Y.
Capt. William Ellett, Appleton City, Mo.
Capt. Henry Mosher, Dayton, Ohio.
Capt. Conrad I. Karleen, Tracy, Minn.
Capt. Joseph Lovering, New York.

DENTAL SERVICE

Major Claire J. Wilson, Hays, Kan.
Capt. Robert E. Brown, West View, Pa.
1st Lieut. Edwin H. Getz, Forest Hills, Long Island, N. Y.
1st Lieut. Arthur H. Walden, Colorado Springs, Colo.

DENTAL HYGIENISTS NEEDED FOR ARMY DISPENSARIES

To supply the Army with dental hygienists, the U. S. Civil Service Commission has eliminated the experience requirement for such personnel. Many hygienists are in demand for army hospitals and dispensaries throughout the country, particularly in the West and Southwest. Dental hygienists are under federal civil service regulations and are stationed only within the United States. They receive $1,970 a year entrance salary including overtime pay. The work week of forty-eight hours includes eight hours of overtime.

Completion of a course in a recognized school of oral hygiene and registration as dental or oral hygienist is all that is necessary to qualify for the positions. There are no age limits and no written tests. Standard application forms must be filed with the United States Civil Service Commission, Washington, D. C. Persons studying oral hygiene may also file, receive provisional appointments, and enter on duty after completion of their courses and registration. Persons who are willing to work in any part of the country have the greatest chance of receiving appointment within a short time. Applicants who desire information about living conditions in areas where army hospitals and dispensaries are located should, on receiving offer of appointment, get in touch with the appointing officer for such information. It is possible that vacancies will occur in the Public Health Service and the Veterans' Administration. Persons already being utilized to their fullest capacity in war work should not apply. Federal appointments are made in accordance with War Manpower Commission policies and employment stabilization plans. Persons selected for appointment may be required to secure statements of availability, but these need not be secured until offer of appointment is received.

Application forms may be obtained at post offices, at Civil Service regional offices and at the U. S. Civil Service Commission in Washington, D. C.

REQUEST FOR PATHOLOGIC MATERIAL FOR ARMY MEDICAL MUSEUM

The Committee on Pathology of the Division of Medical Sciences of the National Research Council has requested publication of the following statement:

In view of the need for pathologic material in undergraduate and graduate education, the Committee on Pathology of the National Research Council urges that all who have suitable anatomic specimens forward them to the curator of the Army Medical Museum, Washington, D. C., for correlation and distribution to other central agencies and to teaching institutions. Material from the following is particularly wanted: the malarial diseases, bacillary dysentery, endamebiasis, the schistosomiases, filariasis, the trypanosomiases, the relapsing fevers, the leishmaniases, the rickettsial diseases, yellow fever, cholera, plague and yaws. On application to the curator, arrangements for transportation will be made.

MAJOR MARGARET JANEWAY IN NORTH AFRICA

Dr. Margaret Janeway of New York City was sworn in as a major in the Army Medical Corps on July 1, according to the New York *Times*, after she had been discharged as a first lieutenant in the Women's Army Corps. She thus became the first woman doctor in the United States Army in the North African theater of operations.

Dr. Janeway became an Army contract surgeon in 1942 and was assigned to the WAAC. She was commissioned a first lieutenant last December 23 and landed in Africa on January 26. Her grandfather was a surgeon in the Union Army in the Civil War and she left her practice in New York to follow in his footsteps.

RECORD LOW DEATH RATE IN EVACUATION HOSPITALS

The Surgeon General of the Army, Major Gen. Norman T. Kirk, is reported to have said in New York on July 8 that the death rate in the army's evacuation hospitals during the African campaign was "the lowest rate of any army at any time" and was between 2.5 and 3.5 per cent of admissions in comparison with a mortality rate during the last war in such hospitals of 15 per cent. General Kirk ascribed the recent low record to the use of plasma, excellent surgery and sulfonamide drugs. He said that blood plasma given at the front lines saved lives which would have been lost if not available for the treatment of cases in shock; he added that "the cream of surgery in America, the middle aged and the younger men who have been teaching," have been stationed at evacuation hospitals at the front.

MEDICAL INSPECTORS GRADUATE

Forty officers of the Medical Department, United States Army, were graduated on June 26 from a special one month training course at the Medical Field Service School, Carlisle Barracks, Pennsylvania. They comprised the seventh class of medical inspectors to receive diplomas at this historic "West Point" of the Medical Department. The duties of medical inspectors are to supervise sanitation and other medical preventive measures in army camps and to make recommendations for the correction of any insanitary conditions. Thirteen of the officers in the class previously attended a basic course at this school. The class was composed of twenty-eight physicians and twelve sanitary engineers.

MISSING IN ACTION

The War Department has listed as missing in action since May 24 Major Jay E. Tremaine of the Medical Department of the Army. Major Tremaine sailed from San Francisco for the Philippines on April 21, 1941 and after a few months' service in Manila was transferred to Fort Pilar, Pettit Barracks, Xamboanga, Mindanao. Major Tremaine graduated from Rush Medical College in 1930. His former home was at Ajo, Ariz.

CIVILIAN DEFENSE

EMERGENCY AMBULANCES FOR CITIES IN TARGET AREAS

The director of civilian defense, James M. Landis, announced plans on July 12 for the distribution of eight hundred and four stretcher ambulance bodies to various cities in target areas in the United States. These ambulance bodies when mounted on the chassis of used passenger cars to be provided by the city will strengthen the civilian defense measures in American cities. They are made of noncritical materials and designed to be mounted on the rear portion of the chassis of a Chevrolet, Ford or Plymouth four door sedan, models 1939-1941, after the part of the body behind the front seat has been removed. They have been approved by the Army corps of engineers. These ambulances can carry four stretchers or built in racks and in addition an attendant who rides with the patients.

Ambulance bodies will be distributed to selected communities in the exposed areas only after the city has provided the chassis on which to mount them. Mr. Landis pointed out that thousands of idle cars throughout the country are in dead storage for the duration of the war and that cities may acquire the used four door sedans either by purchase or by gift. He suggested painting the name of the patriotic donor on the ambulance door when a chassis is donated for this purpose.

NEW HOSPITAL UNITS OF CIVILIAN PHYSICIANS FOR EMERGENCY SERVICE

Thirty-seven hospitals and medical schools have substantially completed the formation of affiliated hospital units of civilian physicians under the program of the Office of Civilian Defense and the U. S. Public Health Service to provide supplementary staffs for emergency base hospitals and to assist the Army in extemporized hospitals in a serious military emergency, the Medical Division of the Office of Civilian Defense announced, June 22. Fifteen hospitals have completed units since the first list of completed units was announced, April 15. The recent additions are:

Delaware Hospital, Wilmington, Del.
Elizabeth General Hospital, Elizabeth, N. J.
Goddard Hospital, Brockton, Mass.
Greenville General Hospital, Greenville, S. C.
Hillman Hospital, Birmingham, Ala.
Macon Hospital, Macon, Ga.
Medical College of Virginia, Richmond.
Methodist Hospital, Dallas, Texas.
Millard Fillmore Hospital, Buffalo.
Mississippi Baptist Hospital, Jackson, Miss.
Mount Sinai Hospital, New York.
Queens General Hospital, Jamaica, L. I., N. Y.
Rhode Island Hospital, Providence.
Santa Clara County Hospital, San Jose, Calif.
Waterbury Hospital, Waterbury, Conn.

Members of these units receive inactive commissions in the U. S. Public Health Service and will be called to active duty by the Surgeon General only on the recommendation of the chief medical officer of the Office of Civilian Defense.

As a result of the request by the Army for temporary assistance of the Office of Civilian Defense-U. S. Public Health Service affiliated hospital units for emergency service in extemporized army hospitals in the event of military need, invitations to form units have now been extended to institutions in interior states. In the beginning of the program, invitations were limited to hospitals and medical schools in coastal areas. Up to June 15 a total of 251 institutions had been invited by the Surgeon General to form units. Unit directors had been nominated by 161 hospitals, and of this number 105 have taken their oaths for commissions in the U. S. Public Health Service. In addition, applications had been received from 649 members of units, of whom 303 have taken their oaths.

The institutions that are named in the adjoining column have received invitations since the original list of 191 was announced as of April 15.

HOSPITALS AND MEDICAL SCHOOLS INVITED TO FORM AFFILIATED UNITS AS OF JUNE 1, 1943

REGION II

New York City: New York Polyclinic Hospital.

REGION V

Indiana:
Protestant Deaconess Hospital, Evansville.
St. Joseph Hospital, Fort Wayne.
Methodist Hospital, Indianapolis.
St. Vincent's Hospital, Indianapolis.
Kentucky:
Louisville City Hospital, Louisville.
St. Joseph Infirmary, Louisville.
Ohio:
Christ Hospital, Cincinnati.
Good Samaritan Hospital, Cincinnati.
Mount Carmel Hospital, Columbus.
White Cross Hospital, Columbus.
Miami Valley Hospital, Dayton.
St. Vincent's Hospital, Toledo.
Toledo Hospital, Toledo.
St. Luke's Hospital, Cleveland.
University Hospitals, Cleveland.
St. Elizabeth's Hospital, Dayton.
West Virginia:
Charleston General Hospital, Charleston.
St. Mary's Hospital, Huntington.
Ohio Valley General Hospital, Wheeling.

REGION VI

Illinois:
Loyola University School of Medicine, Chicago.
Michael Reese Hospital, Chicago.
Northwestern University Medical School, Chicago.
University of Chicago School of Medicine, Chicago.
University of Illinois College of Medicine, Chicago.
St. Luke's Hospital, Chicago.
Springfield Memorial Hospital, Springfield.
Michigan:
University of Michigan Medical School, Ann Arbor.
Grace Hospital, Detroit.
Wayne University College of Medicine, Detroit.
Harper Hospital, Detroit.
Wisconsin:
Madison General Hospital, Madison.
Methodist Hospital, Madison.
St. Mary's Hospital, Madison.
University of Wisconsin Medical School, Madison.
Marquette University Medical School, Milwaukee.

REGION VII

Colorado: St. Luke's Hospital, Denver.
Iowa:
Iowa Methodist Hospital, Des Moines.
Methodist Hospital, Sioux City.
Kansas:
The University of Kansas Hospitals, Kansas City.
The University of Kansas Medical School, Kansas City.
Minnesota:
Minneapolis General Hospital, Minneapolis.
Ancker Hospital, St. Paul.
Missouri: St. Louis City Hospital, St. Louis.
Nebraska:
Creighton Memorial St. Joseph's Hospital, Omaha.
University of Nebraska Hospital, Omaha.
South Dakota: McKennan Hospital, Sioux Falls.

REGION IX

Arizona:
St. Joseph's Hospital, Phoenix.
St. Mary's Hospital and Sanatorium, Tucson.
California:
Hospital for Children, San Francisco.
Mount Zion Hospital, San Francisco.
St. Francis Hospital, San Francisco.
St. Joseph's Hospital, San Francisco.
California Hospital, Los Angeles.
Kern County Hospital, Bakersfield.
Idaho:
St. Alphonsus Hospital, Boise.
St. Luke's Hospital, Boise.
Montana:
Columbus Hospital, Great Falls.
Montana Deaconess Hospital, Great Falls.
Nevada: Washoe County General Hospital, Reno.

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

According to the Netherlands Intelligence Service, a copy of Reich's Commissioner Seyss-Inquart's order, by which Dutch physicians, dentists, pharmacists and veterinary surgeons have been frozen in their professions, has reached Allied territory. The text of the decree makes it clear that the dropping of titles and the removal of professional nameplates will be punishable by penal servitude or, in extreme cases, even with death. Those desiring to leave their professions for any reason, even practitioners ready to retire because of old age, must secure specific permission from the proper official. Until such permission is received they must continue in their professions. Powers previously held by the heads of the Nazi sponsored Physicians Chamber, Dentists Chamber, and so on, whereby they could authorize members to stop practicing, were abolished under the decree.

According to the Netherlands Intelligence Service, lack of materials and the insolvable lubrication problem have caused a gradual collapse of the Dutch transportation system, according to an underground report. Symptoms of deterioration are visible throughout the Netherlands, but effective overhauling of railway equipment is impossible. Automobiles have become a rare sight and those which are still moving are using illuminating gas as fuel, and some even wood elements.

According to *l'Effort*, France, of May 10, publicity regarding medical articles will from now on be controlled unless it contains only a mention of the name and of the article's composition, with the makers' or sellers' name and address, and commercial or technical information, without advertising the character. All other publicity will be submitted to a special committee to be appointed later, responsible for the examination of pamphlets, leaflets and all advertising literature generally. Any direct or veiled promise of recovery, and any fallacious indication likely to mislead the public is from now on strictly prohibited.

Transocean, Bulgaria, May 12, reports from Sofia that the Public Health Directorate has concluded an agreement with Germany for the delivery of German drugs in return for Bulgarian medicinal herbs and other raw materials. The first consignment of drugs sent to Bulgaria will be medicaments for use against malaria.

The number of women doctors, according to NPD, Germany, May 13, is today 40 per cent higher than in 1939. There are 9,246 women doctors, as compared with 5,843 in 1939.

SBT reports from Oslo in the *Svenska Dagbladet*, May 13, that fourteen medical students from Oslo University, who were conscripted in Hungary at the beginning of May for compulsory labor, have now been released to enable them to continue their studies.

Eskilstuna-Kuriren, May 10, reports that ill health among Norwegians deported to Germany is catastrophic, and several deaths have been reported. Epidemics are raging in the Oranienburg concentration camp, where the treatment of Norwegian prisoners is "beneath criticism."

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l'Effort, France, of April 13, states that owing to the scarcity of certain drugs the Chambre syndicats have decided that chemists are entitled to refuse to deliver drugs to customers. The newspaper does not specify when.

The March 26 issue of the *Deutsche medizinische Wochenschrift*, Leipzig, contains a description of the chronic poisoning by arsenic of 170 soldiers. The soldiers were serving in an AA battery stationed near a village where in 1919 containers with poison gas from a nearby munitions depot had been buried. The poison is supposed to have leaked into the water supply which the soldiers used and this is thought to have been responsible for the reported mass poisoning. Most of the men recovered after a short treatment, only a few being still unfit for military duty.

MEDICAL AND PSYCHIATRIC SOCIAL WORK SCHOLARSHIPS

Seventy-five scholarships in medical and psychiatric social work will be made available to eligible candidates between July 1, 1943 and July 30, 1944 by the American Red Cross. These are a continuation of the program initiated last December. On successful completion of the scholarship training, students will be assigned to positions on Red Cross staffs in military hospitals, where the need for qualified personnel has rapidly expanded because of the war. Candidates may designate the school of their choice from a list of social work schools offering an approved course in medical and psychiatric social work. Educational requirements include successful completion of one year of graduate work in an accredited school of social work, and it will be necessary for each applicant to apply directly to the school of his choice to obtain approval for admission. Awards of full tuition and $65 a month for maintenance will be made according to the individual qualifications of the applicant in order of receipt of the applications by the assistant director of Red Cross Military and Naval Welfare Service, Hospital Service, in the four following Red Cross area headquarters: North Atlantic Area, 300 Fourth Avenue, New York City; Eastern Area, 615 North St. Asaph Street, Alexandria, Va.; Midwestern Area, 1709 Washington Avenue, St. Louis; Pacific Area, Civic Auditorium, San Francisco.

RESTRICTION ON STERILIZER EQUIPMENT

A shortage in the supply for defense, for private account and for export, has made it necessary for the War Production Board to amend general limitation order L-266 restricting the sale and delivery of sterilizer equipment except as provided in subparagraph 2 of paragraph D of the order. No person shall sell or deliver sterilizer equipment except or for the account of (1) the Army or Navy of the United States, (2) any agency of the government for delivery to or for the account of the government of any country pursuant to the act of March 11, 1941 (the Lend-Lease Act), (3) any person to whom an export license covering the specific equipment has been issued by the Board of Economic Warfare, provided, however, that delivery shall not be made to any person holding an export license issued prior to Feb. 24, 1943 unless it has been revalidated by the Board of Economic Warfare, (4) any other person who has filed form PD-556 pursuant to paragraph (e) of this order and has been authorized by the War Production Board to receive sterilizer equipment and has furnished to his supplier one copy of such form signed in the name of the War Production Board.

RESTRICTIONS ON DELIVERY OF CAFFEINE AND THEOBROMINE

The War Production Board has amended conservation order M-222 to provide that no supplier shall deliver caffeine or theobromine to any person except as specifically authorized or directed in writing by the War Production Board, and no person shall accept delivery of caffeine or theobromine which is delivered in violation of this order. However, specific authorization in writing of the War Production Board is not required for the (1) delivery of these drugs for medicinal purposes by any supplier to any person for compounding into standard dosage forms, (2) delivery of caffeine or theobromine by any person to any other person for compounding into standard dosage forms for medicinal purposes pursuant to toll agreement or (3) delivery by any supplier to any person in any calendar month of not more than 2 pounds of theobromine and not more than 2 pounds of caffeine. These and other amendments to conservation order M-222 were published by the War Production Board, Washington, D. C., on July 6.

ORGANIZATION SECTION

MEDICAL LEGISLATION

STATE MEDICAL LEGISLATION

Alabama

Bills Enacted.—S. 22 has become Governor's No. 425 of the Laws of 1943. It requires the state board of health, with the assistance of the committee on cancer control of the Medical Association of the State of Alabama, to formulate a plan for the care and treatment of indigent persons suffering from cancer and to establish and designate standard requirements for the organization, equipment and conduct of cancer units or departments in general or private hospitals or private clinics of the state. The board is also required to formulate and put into effect an educational plan for the purpose of preventing cancer throughout the state, aiding in the early diagnosis of cancer and informing hospitals and cancer patients of the proper treatment. S. 64 has become Governor's No. 529 of the Laws of 1943. It requires all persons between the ages of 14 and 50 residing or living in the state of Alabama to have their blood examined for syphilis by an approved laboratory test. Any person sick or injured at the time of the official testing, however, may present a certificate from a physician duly licensed in the state of Alabama temporarily exempting him from the test, but it shall be the duty of the physician to secure the necessary specimen when such person is able to have the test made.

Connecticut

Bill Enacted.—H. 1383 has become chapter 385 of the Laws of 1943. It provides that any graduate of an approved medical school may serve as a resident physician in any state-aided hospital for the duration of the war and for not more than six months thereafter if the written consent and approval of the Connecticut medical examining board has been obtained.

Florida

Bills Enacted.—S. 5 has become chapter 21841 of the Laws of 1943. It provides for the creation and establishment of a state venereal hospital to be used for the care, treatment and hospitalization of persons afflicted with venereal disease under such rules and regulations as may be prescribed by the board of commissioners of state institutions of the state. S. 306 became law without approval on June 14. It provides for the establishment and creation of an institution of higher learning to be known as the University of South Florida, which shall be a state university and shall have as its primary purpose a school of medicine, a school of pharmacy and a school of dentistry. The law further provides that the school of medicine and the school of dentistry shall be first class medical and dental schools and shall be maintained and operated in accordance with the standards of education approved by the American Medical Association and the American Dental Association.

Illinois

Bills Enacted.—S. 244 was approved, July 10, 1943. It provides for the establishment and maintenance of county and multiple county public health departments. S. 525 was approved, July 10, 1943. It amends the medical practice act by providing that students matriculating or entering on a medical course during the years 1942, 1943 and 1944 may take a course the elapsed time of which is not less than thirty-six months rather than forty months as previously required. The purpose of this proposal is to enable graduates of accelerated medical schools to obtain licensure in Illinois.

Massachusetts

Bills Enacted.—S. 544 amends the premarital examination law so as to authorize the execution of the required certificate by a physician registered or licensed to practice in any other state of the United States, in addition to Massachusetts practitioners and commissioned medical officers as now provided. H. 1655 has become chapter 506 of the Laws of 1943. It authorizes expenses for medical, hospital and other services rendered to aged persons which remain unpaid at the time of such person's commitment to an institution or at the time of such person's death to be paid directly to the person furnishing such service.

Wisconsin

Bills Enacted.—S. 313 has become chapter 372 of the Laws of 1943. It provides that no person shall practice medicine, surgery or osteopathy or any other system of treating bodily or mental ailments or injuries of human beings under any other Christian or given name or any other surname than that under which he was originally licensed or registered to practice in Wisconsin or any other state. This law does not apply to a change of name resulting from marriage or divorce, however. S. 347 has become chapter 375 of the laws of 1943. It creates a new section of the statutes to make uniform the law with relation to administrative procedure and judicial review of various agencies and boards within the state exercising statewise jurisdiction. This would include the board of medical examiners. A. 73 has become chapter 484 of the Laws of 1943. It amends the income tax law by authorizing the deduction therefrom of payment for expenses for hospital, nursing, medical, surgical, dental and other healing services and for drugs and medical supplies incurred by the taxpayer on account of sickness or of personal injury to himself or his dependents in excess of $50 but not more than $500. A. 665 has become chapter 480 of the Laws of 1943. It amends the law relating to the practice of nursing by authorizing a licensed nurse in another state to be granted a certificate in Wisconsin without examination if her credentials of general and professional educational qualifications are equivalent to those required in Wisconsin.

OFFICIAL NOTES

SUMMER HEALTH HINTS

The next three programs for the series of broadcasts over WLS on Thursdays at 2:45 p. m. under the title "Summer Health Hints" will be as follows:

July 29. "Light Summer Meals."
Aug. 5. "Picnic Lunches."
Aug. 12. "Hiking."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Outbreak of Anthrax.—An outbreak of anthrax in western Mobile County involved the illness of 2 men and the death of 12 animals, newspapers reported on June 23. It was believed that the men contracted anthrax while removing the hide of an infected animal.

CALIFORNIA

Psychiatrist Wanted.—The California State Personnel Board announces an examination for psychiatrist for the California Youth Authority. The position, which provides a monthly salary of $425, offers opportunity and responsibility for diagnostic and therapeutic work in juvenile delinquency and youth problems. Applications should reach the state personnel board at Sacramento on or before August 16.

Changes in Industrial Hygiene Personnel.—Dr. Clifford Kuh has resigned as director of the state bureau of industrial health to join the Permanente Foundation in California, according to *Industrial Hygiene*. Dr. Edward E. Dart, director of the division of industrial hygiene in the Los Angeles Department of Health, has resigned to become physician in charge of the Dodge Chicago Plant of the Chrysler Corporation, and Yale Rosenfeld, assistant sanitary engineer, U. S. Public Health Service, has been named acting director.

COLORADO

Resignations at the University.—Dr. Philip Work recently resigned as professor of neurology and head of the department at the University of Colorado School of Medicine, Denver. Dr. Work is now a lieutenant colonel in the Medical Corps of the Army. Dr. Clough T. Burnett has resigned as associate professor of medicine.

CONNECTICUT

State Medical Election.—Dr. H. Gildersleeve Jarvis, Hartford, was chosen president-elect of the Connecticut State Medical Society at its meeting in May and Dr. George M. Smith, Pine Orchard, was inducted into the presidency. Dr. Creighton Barker, New Haven, is the secretary. The next annual meeting will be held in Bridgeport in May.

Memorial to Dr. Steiner.—A room adjoining the historical library at Yale University, New Haven, will be furnished as a memorial to the late Dr. Walter R. Steiner, Hartford, a specialist in internal medicine, through the generosity of Mr. Elisha H. Cooper, New Britain. The room will be used as a student reading room and will also house Yale medical memorabilia, which include items of historical interest given by Dr. Steiner during his lifetime and others which have been added from his collection by his sisters since his death. Dr. Steiner was a classmate of Mr. Cooper in the class of 1892 of Yale.

Promotions at Yale.—William U. Gardner, Ph.D., assistant professor of anatomy at Yale University School of Medicine, New Haven, has been appointed professor of anatomy and chairman of the department. He succeeds Edgar Allen, Sc.D., who died on February 5 while on active duty with the U. S. Coastguard Reserve. Dr. Harry S. N. Greene, associate professor of pathology and surgery at Yale, has been named professor of pathology. Cornelius Osgood, Ph.D., associate professor of anthropology and curator of anthropology in the Peabody Museum, has been appointed chairman of the department of anthropology.

ILLINOIS

Parking Problems of Physicians.—At a meeting of the Salem city council on June 21 consideration was given to the complaint of Salem physicians that the two hour parking law would cause them serious inconvenience. The physicians requested that parking spaces be reserved for them. The council decided that an exception could not legally be made for physicians but asked the police commissioner and city attorney to study the problem in order to find a practical solution.

Chicago

Promotions at Northwestern.—Promotions on the faculty of Northwestern University Medical School include Drs. Mark T. Goldstine to professor of obstetrics and gynecology, Garwood C. Richardson to assistant professor of obstetrics, William B. Serbin to assistant professor of obstetrics, George L. Apfelbach to associate professor of bone and joint surgery, Earl O. Latimer to assistant professor of surgery and George K. Yacorzynski, Ph.D., to assistant professor of nervous and mental diseases.

IOWA

Three Cases of Spotted Fever.—Three cases of Rocky Mountain spotted fever with one death had been reported to the state health department up to June 22. One patient was a 14 year old boy in Warren County who first complained of illness on May 26. The patient gave no history of tick bite but had removed ticks from a dog and had worked under a tractor in a swampy area several days before taking sick. The other 2 cases were recorded from Ottumwa in Wapello County, one a boy 2 years of age who had onset of disease June 6 and who died June 16. The third patient was the mother of the 2 year old child who had sudden onset on June 11. Members of the household live in a wooded area at the edge of the city. Two small dogs belonging to the family were tick infested. The mother knew of no tick bite but had removed ticks from the child shortly before the illness.

MAINE

State Medical Election.—Dr. Raymond V. N. Bliss, Blue Hill, was chosen president-elect of the Maine Medical Association at a business meeting in Augusta on June 20 and Dr. Oscar F. Larson, Machias, was inducted into the presidency. Dr. Frederick R. Carter, South Portland, is secretary-treasurer.

MICHIGAN

Student Loan Fund Created.—A scholarship and loan fund amounting to $4,000 has been established at Wayne University, Detroit, for the use of students in medical technology under a grant from the W. K. Kellogg Foundation. Of the total grant $2,000 will be used as a loan fund. The other half will be used to furnish scholarships to students in the clinical period. The medical technology curriculum is sponsored jointly by the college of liberal arts and the college of medicine.

Personal.—Miss Mary P. Connolly, director of health education for the Detroit Department of Health, is retiring after twenty-five years' service.——Dr. Duncan J. McColl, Port Huron, was honored at a dinner, May 25, given by the St. Clair County Medical Society in recognition of his completion of fifty years in the practice of medicine. He was presented with a desk set and a portfolio by members of the society.——Dr. Roger V. Walker, Detroit, has been appointed a member of the Michigan Crippled Children's Commission, his term to expire on March 23, 1946.

Special Appropriation for Tuberculosis Care.—Effective July 1, the state administrative board will approve increased payments to counties whose hospital bills for care of residents with tuberculosis are out of line with tax incomes. A special $250,000 appropriation will be available for the purpose in the fiscal year. Benefiting will be counties that are called on to furnish hospital care in excess of forty patient days each year for each $100,000 assessed valuation. Twenty-five counties qualify for such additional assistance now. Heading the list is Houghton County, whose present hospital load is 203 patient days a year per $100,000 assessed valuation. Also beginning July 1 the state increases its payments to all counties to $2 per hospital day as against the $1.50 paid at present, the last legislature having increased the appropriation for the purpose to $2,650,000. In no case will the state pay more than $3.50 for one day's hospital care.

MINNESOTA

Special Unit for Study of Infantile Paralysis.—The National Foundation for Infantile Paralysis has approved a five year grant of $175,000 to the University of Minnesota to set up a special unit to study infantile paralysis. The grant is for the five year period ending June 30, 1948. Building space and basic laboratory facilities are already available at the University of Minnesota. The new unit will be under the general direction of a committee composed of members of the departments of physiology, neuropsychiatry and pediatrics of the medical school. Dr. Maurice B. Visscher, professor and head of the department of physiology, will be in charge of administration. An advisory committee will be appointed by

Mr. Basil O'Connor, president of the foundation, to assist in directing the committee from time to time. The different departments of the medical school will set up a coordinated medical program which will investigate the mechanics involved in the effects of various treatment procedures, the disturbances in the nervous system which produce the many different kinds of symptoms found in infantile paralysis, the nature of the chemical changes produced in the cells by the infantile paralysis virus and other related problems.

NEW JERSEY

Award to Dr. Martland.—The Edward J. Ill Award of the Academy of Medicine of Northern New Jersey was presented on May 20 to Dr. Harrison S. Martland, Newark, since 1925 chief medical examiner of Essex County. The inscription on the plaque reads "renowned pathologist, dynamic teacher, eminent civic benefactor." Dr. Martland graduated at the Columbia University College of Physicians and Surgeons, New York, in 1905. He is a past president of the Essex County Anatomical and Pathological Society, which in 1935 established the Harrison S. Martland Lecture in his honor. Dr. Martland has also served as director for the Graduate Fortnight of the New York Academy of Medicine. He is professor of forensic medicine of the New York University College of Medicine and in 1936 reorganized the department. For a number of years he has been associate editor of the *American Journal of Surgery*. Speakers at the presentation included Dr. Francis Carter Wood, director emeritus of the Institute for Cancer Research, Columbia University, and Dr. Edward W. Sprague, president of the Academy of Medicine of Northern New Jersey.

NEW YORK

Fund for Research in Internal Medicine.—The University of Rochester ultimately will receive an estimated $1,784,275 for use as a research fund under the will of Mrs. Bertha H. Buswell, Buffalo. According to *Science*, the will directed that the money be used to establish the "Bertha H. Buswell and Dr. Henry C. Buswell Memorial" for research by the department of internal medicine in the school of medicine. The amount represents the residue of the estate and is subject to a life interest by Mrs. Buswell's brother. The late Dr. Buswell bequeathed $900,000 for the use of the department of urology in the medical school.

Typhoid Carriers.—A total of 437 typhoid carriers, exclusive of those in state institutions, were under supervision in upstate New York at the close of 1942. Thirty new carriers were added to and 25 were removed from the register during the year. Twenty-two were discovered as a result of epidemiologic investigation of sporadic cases of typhoid, 7 by means of release cultures, and 1 was discovered accidentally while hospitalized with a diagnosis of bronchopleural fistula. Of the 25 carriers whose names were removed from the register, 18 died. One was considered cured following cholecystectomy, and 6 others were removed from the register because of change of residence of the carrier to a community outside the jurisdiction of the state health department.

New York City

Industrial Physicians Register.—The Long Island College of Medicine announces the creation of a register of more than one hundred and fifty physicians of the metropolitan New York area with experience in industrial medicine and surgery. The register was established as a service to business concerns with health problems or in need of additional medical personnel; it is open for consultation by authorized representatives of business firms who make contact direct with the candidates. The college takes no responsibility beyond making the information available. The file includes names of physicians in all five boroughs of New York, Long Island, Westchester and New Jersey. The register was established after a number of industrial and other types of firms inquired as to whether the college could recommend medical personnel and resulted from the postgraduate course in industrial medicine conducted by the college in November 1942.

Diagnostic Service in Tropical Diseases.—On June 18 the laboratory of the city health department in the Meinhard Health Center was moved to enlarged quarters in the Washington Heights-Riverside District Health Center to provide the "tropical diseases diagnostic service of the New York City Health Department." The move was made in anticipation of an increased demand for laboratory service and special information on parasitic and other tropical diseases. For the past eight years the service has been available at the Meinhard Health Center, but it is expected that the service will be more accessible from all parts of the city in its new location. According to the *Journal of the Medical Society of the County of New York*, physicians, clinics and hospitals may refer specimens or inquiries concerning diagnosis or treatment to the diagnostic service. Information will be furnished by the physician in charge, who is especially trained in tropical medicine, about the proper collection and submission of feces, blood and urine and about clinical diagnosis or treatment with regard to cases of a possible parasitic or tropical nature. Reports will be sent directly to the referring physician, clinic or hospital.

Courses in Physical and Occupational Therapy.—Columbia University announces special courses to prepare personnel in physical therapy and occupational therapy for immediate and postwar rehabilitation. Both programs are planned to meet the requirements designated by the Council on Medical Education and Hospitals of the American Medical Association and are conducted within the university in close relationship with the College of Physicians and Surgeons, the department of nursing education and the health and physical education of Teachers College. Clinical practice will be given in the Columbia-Presbyterian Medical Center and other hospitals in the New York area. Admission requirements for the nine month course for physical therapy technicians include two years or sixty semester hours of college work including courses in physics and biology or graduation from an accredited school of nursing or an accredited school of physical education. For the occupational therapy course at least one year of college is required and preferably two years. A certificate of proficiency will be granted by the university following the satisfactory completion of either of these courses. Additional information may be obtained from the physical and occupational therapy office, room 312, School of Business, Columbia University.

NORTH DAKOTA

Dr. Hill Appointed State Health Officer.—Dr. Frank J. Hill, Bismarck, who has been acting state health officer for North Dakota for the past eighteen months, has been appointed state health officer by the North Dakota Public Health Advisory Council for a term of four years. He graduated at Jefferson Medical College of Philadelphia in 1930. Dr. Hill also has a degree of master of public health.

PENNSYLVANIA

Isolation Hospital for Venereal Patients.—An isolation hospital will be operated by the state department of health at Lancaster for girls and women found infected with a venereal disease. The proposed hospital will be located in a building formerly occupied by the Home for Friendless Children, which has been leased to the state department of health by the county commissioners for one year. The hospital, which will accommodate 75 girls, is expected to be in operation by the end of the summer.

Philadelphia

Signing Health Certificates for Motorists.—The Office of Price Administration announced on July 2 that it would report to county medical societies the names of physicians who had signed health certificates which appeared to be unnecessary, according to the New York *Times*. Agents of the OPA assigned to two bridges between Philadelphia and points across the Delaware River said that "up to 50 per cent" of the drivers they stopped had doctors' certificates stating that their holiday trips were necessary for their health. The OPA attorney said that the only excuse for nonbusiness motoring would be a certificate signed by a doctor stating that a person's health would be undermined or his recovery retarded if he could not make a trip and that public transportation would be inadequate and would be injurious to the patient's health.

Pittsburgh

Harry Meller Dies.—Harry B. Meller, head of air pollution investigation at Mellon Institute since 1923 and formerly chief of the bureau of smoke regulation in the city of Pittsburgh, died on June 27, aged 65. Dr. Meller had been director of the Industrial Hygiene Foundation of America from its founding in 1935 to last September, when he resigned on account of poor health.

SOUTH CAROLINA

Physicians Retire from Teaching Positions.—The retirement has been announced of Dr. Robert S. Cathcart, professor and head of the department of surgery, Medical College of the State of South Carolina, Charleston, and Dr. John van de Erve, head of the department of physiology. Both physicians have reached the retirement age and will become professors emeritus. Dr. Frederick E. Kredel, professor of surgery, has been named

acting head of the department. Dr. Cathcart graduated at South Carolina in 1893. He joined the medical college faculty in 1913, when it was reorganized as a state institution, as professor of abdominal surgery. He later became head of the department and chief surgeon at Roper Hospital, for which in 1905 he had been instrumental in obtaining a new building. He is a past president of the South Carolina Medical Association, Southern Surgical Association and the Tri-State Medical Association. Dr. van de Erve is also pastor of the French Protestant (Huguenot) Church. He graduated at Rush Medical School, Chicago, in 1911. Before joining the South Carolina faculty in 1919 as professor of physiology he had been associate dean of the Marquette University School of Medicine, Madison, Wis., and head of the physiology department at the University of Alabama School of Medicine, University, Ala.

WEST VIRGINIA

Personal.—Dr. Guy Hinsdale, formerly medical director at the Greenbrier Hotel, White Sulphur Springs, and lately located at Lewisburg, has moved to Ogunquit, Maine.——Dr. Roy R. Summers, Morgantown, who has served as head of the West Virginia University health center for several years, has resigned, effective August 1. After completing a postgraduate course in surgery, he plans to locate at Charleston.

New Head of Vital Statistics.—Dr. Martin B. Woodward, registrar, state board of health, Columbia, S. C., has been named as director of the bureau of vital statistics. He succeeds Dr. Franklin H. Reeder, who is in the military service. Dr. Woodward has served as director of a like bureau in the South Carolina Health Department for the past several years. He has been engaged in public health work since 1926.

Dr. Offner Named State Health Officer.—Dr. John E. Offner, medical superintendent of the Western State Hospital for the Insane, Weston, has been appointed state health commissioner by Governor Matthew M. Neely for the term ending May 31, 1947. He succeeds Dr. Clifton F. McClintic, Charleston, who held the office since March 17, 1941 but whose term expired on May 31, 1943. Dr. Offner graduated at Maryland Medical College, Baltimore, in 1904. Dr. Offner was located for a number of years at Fairmont, prior to his appointment as superintendent of the Weston Hospital in October 1933.

GENERAL

Quinine Research.—Cinchona Products Institute, New York, announces the following research projects on quinine and other alkaloids of cinchona: Cornell University Medical College, New York, "The action of Cinchona alkaloids on experimental infections," under the direction of Drs. Harry Gold and McKeen Cattell; New York University, a threefold investigation on (*a*) quantitative study of intestinal absorption and subsequent distribution of the alkaloids between blood, brain and body fluids, (*b*) mode of action on myoneural systems and micro-organisms and (*c*) action of the alkaloids on isolated enzyme systems, under the direction of Dugald E. S. Brown, Ph.D., New York; Johns Hopkins University School of Medicine, Baltimore, a study of quinine and malaria in the Upper Mississippi Valley, by Dr. Erwin H. Ackerknecht, under Dr. Henry E. Sigerist of the Institute of the History of Medicine; Battelle Memorial Institute, Columbus, Ohio, a preliminary study of the industrial uses of Cinchona alkaloids, under the direction of Maynard M. Baldwin, Ph.D., and Frank C. Croxton, Ph.D. It was also announced that two research fellowships for graduate workers in this field are now available.

Patents on Manufacture of Vitamin D Held Invalid.—The U. S. Circuit Court of Appeals at San Francisco, according to press association reports, has declared invalid the patents owned by the University of Wisconsin Alumni Research Foundation governing the manufacturing of vitamin D, which are said to have brought to the foundation more than $7,500,000 in royalties. A licensing system for commercial users of the formula, according to briefs in the case, had been set up by the foundation and 250 licenses issued, all under the control of the foundation. Harry Steenbock, Ph.D., Madison, of the university, did the research and obtained the patents on the formula. The ruling of the court of appeals followed an appeal by Vitamin Technologists, Inc., Los Angeles, from a ruling by the federal court at Los Angeles favoring the foundation, which had sued for an injunction against and an accounting from the Los Angeles firm on the allegation of infringement of patent. According to the ruling by the court of appeals, all vitamin D patents held by the university and the foundation are invalid and therefore could not be infringed on. It was noted by the court that the patents involved the production of vitamin D for the cure of rickets by means of subjecting foods to the radiation of ultraviolet rays as produced by a quartz mercury lamp. It was pointed out in the ruling that it had been known for many years that the sun's rays on cut alfalfa hay cured in the field results in an antirachitic food for pigs and that prior to 1923 the effects the rays had on coconut and on milk were known. The decision was written by Federal Judge William Denman. It stated that Dr. Steenbock himself had verified these facts with respect to alfalfa and that "we thus have the claimed inventor proving that it is from the ultraviolet rays of the sun that the alfalfa acquires its vitamin. That is, by the process claimed by him as patentable." Press dispatches also stated that George I. Haight, LL.D., Chicago, president of the foundation, has announced that it would appeal the ruling by the San Francisco Court of Appeals.

Tuberculosis Case Registers.—As a postwar activity the National Tuberculosis Association plans an intensive campaign to establish central tuberculosis case registers in all centers of the country where health administration is maintained on a sound basis. To this end a manual outlining methods of organizing and maintaining such a central record file has been prepared and will shortly be printed under the direction of Dr. Edward X. Mikol, a member of the bureau of tuberculosis of the New York State Department of Health, Albany. In addition, the National Tuberculosis Association is developing a consultant service in connection with the establishment of central registers. Martha Carr Jones, statistical assistant in the association, has recently been assigned as consultant. The principal objectives of the new central registers will be:

To record the location and movement of patients at all times.
To aid in determining the need for the number, frequency and location of clinics, as well as the need for hospital facilities.
To indicate deficiencies in the examination and supervision of individual patients and contacts.
To provide information for the education of physicians, nurses, health agencies and the public.
To aid in the appraisal of the tuberculosis problem in a community.
To aid in the evaluation of the effectiveness of control measures.
To aid in the planning and organization of suitable health activities.
To aid in the supervision of public health nurses.
To provide information to justify requests to appropriating bodies for additional personnel or facilities.

Government Services

Consultation Service in Health Education

The division of industrial hygiene, National Institute of Health, Bethesda, Md., in cooperation with the division of sanitary reports and statistics, is developing a consultant service to stimulate health education programs for industrial workers. Miss Elna I. Perkins was appointed recently to the position of associate health education specialist in the division to assume responsibility as liaison in the development of this much needed service.

Physicians Needed for Civilian War Service

The U. S. Civil Service Commission has liberalized its civil service examination for medical officers in view of the continuing critical shortage of physicians to engage in war work in the civilian branches of the government. There are no written tests and no age limits. Before a definite offer of appointment is made, eligible physicians are cleared through the Procurement and Assignment Service for Physicians, Dentists and Veterinarians of the War Manpower Commission.

The twenty optional branches under which doctors may apply range from general practice to aviation medicine. Those appointed will perform professional duties as doctors of medicine in active practice in hospitals, in dispensaries or in the field or in rural areas or in bureaus of the government such as the Veterans Administration, Civil Aeronautics Administration, Public Health Service and Food and Drug Administration. Doctors will also be used in industrial establishments under direction of the War Department. Applicants for all grades must have received the degree of M.D. from an accredited medical school. Applicants for the senior medical officer grade ($5,228 a year) must have had at least five years of appropriate medical experience, for the medical officer grade ($4,428 a year) three years of experience in addition to a required internship, and for the associate medical officer grade ($3,828) one year of internship. The salaries quoted include overtime pay.

Information and application forms may be obtained at first and second class post offices, Civil Service Regional Offices and the commission in Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 12, 1943.

Salt and Water Requirements in Hot Climates

The war has made important the question of the salt and water requirements of troops in hot countries. The *Army Medical Department Bulletin* states that in order to reduce heat casualties they must be acclimatized and receive the necessary amount of salt and water. Efficient work in hot climates depends on physiologic adaptation—decrease in heat production and increase in sweating. When the body reaches a certain critical temperature, just below 102 F., work becomes inefficient and hyperthermia threatens. Acclimatization is marked by a progressively smaller rise in body temperature for performing a standard piece of work, until those completely acclimatized can work for long periods without rise to the critical level, provided the intake of salt and water is adequate. For troops going to the tropics a month or two of vigorous work in summer heat (about 80 F.) is a good preparation and should be continued during the voyage by exercises.

It has been found experimentally that men properly acclimatized and receiving an ample supply of water require 2 Gm. of salt per hour of work and 0.5 Gm. per hour of rest. Those in sedentary occupations require 12 Gm. daily; those working hard for eight hours daily require 24 Gm. The fresh ration scale in the Middle East, including culinary salt, is 17 to 20 Gm. daily; the canned ration, 22 to 25 Gm. These amounts are sufficient when the water intake does not exceed 2 gallons. Only when this is exceeded is an issue of extra salt necessary.

Adequate water is as important as salt in preventing the effects of heat. Under tropical conditions with a day temperature of 94 F. and a relative humidity of 80 to 85 per cent, the daily excretion of sweat in men on moderate work is 5 to 6 liters. In desert conditions, with a day temperature of 100 to 120 F. and a relative humidity of 25 to 30 per cent, one may excrete as much as 8 liters. For the former a fluid intake of at least 6.5 liters and for the latter up to 9 liters is necessary to maintain the water balance. Some of this intake can be obtained from the water content of food and from the oxidation of foodstuffs, but the daily intake of water should not be allowed to fall below the figures given. For hard work considerably more is required.

It is recommended that men should be encouraged to drink as much water as they want, and preferably more, whenever thirsty, as this increases efficiency and prevents heat symptoms. When extra salt is given it should not be consumed during work but at meals or in rest periods, especially at night. Tablets of 10 grains are supplied and one is to be taken with each pint of water. Taken alone they nauseate.

Labor Party's Plan for a State Medical Service

The labor party has produced a plan for a state medical service similar to that of the Beveridge plan. It urges the establishment of a state medical service and the insurance of the health of all by the entire nation. While admitting that the country's health has substantially improved, it asserts that the physical standard of a great part of the nation remains deplorably low. The annual cost of illness in payments to the sick and in medical services is estimated at $1,500,000,000. The labor plan is that there should be a central authority to arrange the health services as a whole, including the medical service, subject to the control of Parliament. This authority should be the Ministry of Health, with its accumulated knowledge of national health conditions. Its powers should be extended to cover all the health services, including those now controlled by other departments, such as the school medical services and the services in factories.

The division of the country into regions, each with its own authority for local government, democratically elected, is recommended. Each regional authority is to appoint its health committee. Within the region there should be a series of divisional hospitals, associated with divisional health centers. The divisional units should be large enough for one fully equipped hospital with specialists of every kind. Experience shows that an economical size for such units is a population of 100,000, which requires a hospital of 1,000 beds.

THE PHYSICIAN'S PART

Changes in the financial status of the physician are advocated. It is argued that the present system of payment is unsatisfactory from the standpoint of the nation, the patient and the physician. The medical profession should be organized as a national full time, salaried and pensionable service. Physicians and nurses should have fixed hours of service, which must be full time, not part time. To the suggestion that some physicians may prefer to retain their private practice and remain outside the scheme, it is replied that the new service should be made so efficient and complete that no patient could desire a better.

THE FINANCE

The necessary expenditure should be drawn partly from national taxation and partly from rates payable to the regional authorities. An estimate is given for a comprehensive service for the treatment of the sick (not including cash benefits) of $700,000,000 annually. This is less than that given in the Beveridge plan, which amounted to $850,000,000, and it is claimed that the labor plan gives more benefits and greater facilities.

Warning Against Overuse of Warmth in Treatment of Shock

In the *Army Medical Department Bulletin* the War Office has given a warning against overdoing the use of warmth in the treatment of shock. "Keep the patient warm" is an axiom in the treatment of the injured. The harm due to cold was recognized in the last war, when casualties were found to do worse in winter than in summer and the therapeutic value of warmth was readily demonstrated. But one can have too much of a good thing, and apart from accidental burning of unconscious or drowsy patients the enthusiastic application of heat has risks.

After severe injuries the blood volume nearly always diminishes, because fluid has left the blood vessels either from hemorrhage or from oozing into damaged tissues or both. The consequent fall in blood pressure brings into play a vasoconstrictor mechanism which raises pressure by reducing the capacity of the vascular bed. It is not yet certain which parts of the vascular system are affected by this vasoconstriction, but undoubtedly the cutaneous circulation is much diminished. And the capacity of the cutaneous vessels is considerable. Even in a normal person warming may increase the blood content of the skin by as much as a pint. In shock in which the superficial vessels have been constricted and depleted, warming might well bring far more than a pint to the surface, diverting it from more vital functions.

Thus excessive warming may interfere with nature's attempt to restrict its total vascular capacity—the physiologic endeavor to make a little go a long way. It may accelerate loss of fluid from the surface by evaporation and sweating; it may increase the metabolism of skin and muscle and thus jeopardize structures whose blood supply is impaired by local injury; and it may promote autolysis of damaged tissues and absorption of the products. Experimentally it has been shown that general and vigorous heating of injured animals decreases their chance of recovery.

Theory and experiment therefore agree that war casualties should be warmed in a conservative manner, e. g. with blankets and hot water bottles after removal of wet clothes. More potent methods, such as the hot cradle, may be used when the blood volume is being, or has been, restored by transfusion. But the heat should never be so great as to cause sweating, and limbs with injured vessels or gangrene should not be warmed at all. As far as the cold of shocked patients is compensatory, it is a symptom which should not be treated energetically unless its basic cause (reduction of blood volume) can be treated at the same time. While warming plus transfusion give excellent and prompt results, warming alone may be carried too far and lead to vasodilatation, circulatory collapse and death.

Publicity Campaign Against Venereal Diseases

The Ministry of Health is continuing the publicity campaign against venereal diseases described in previous letters to THE JOURNAL. The problem has been brought into the open and is freely publicized in broadcasts, newspapers, cinemas, theaters and elsewhere. Posters suitable for both indoor and outdoor display entitled "Delay Is Dangerous," "Treatment Must Be Continued" and "Quack 'Cures' Are Useless" have been sent to the local health authorities by the Central Council for Health Education. The ministry requests these authorities to arrange for a comprehensive and continuing display of the posters in conjunction with a poster giving particulars of local treatment facilities. All health officers have received from the council particulars of the facilities—pamphlets, films and lectures—provided by that body. On application the council will suggest the names of lecturers. In the newspapers advertisements, to be continued for at least six months, advise readers that information and advice regarding venereal diseases may be obtained from the local health department.

South African Camp for the Wounded

There is in Natal, South Africa, what a woman dietitian working there has described as the largest convalescent depot in the world. It collects empire convalescents from all the hospitals in South Africa and keeps them until they can be returned to their units or sent to England. It can accommodate 4,000 patients, and with staffs of all kinds there are nearly 5,000 persons living in the camp. The hospital is well built and splendidly equipped and will be turned into a civilian hospital after the war. It is 3,500 feet above sea level, in the mist belt, and has a wonderful climate. English fruits grow around it. The depot buildings are mostly made of wattle and daub. Each of the two kitchens has messes which seat 800, and they have a staff of 23 European women and 23 Bulu boys to do the rough work. There is a picture house and a swimming bath. Games—tennis, bowls and football—are provided.

The British Medical Bulletin

A British council has been in existence for some years for the purpose of correcting a belief sedulously propagated by the Nazis that Britain no longer has anything in art, literature or science worthy to be offered to the world. The council has added to its activities a medical bureau. This is in charge of Dr. Howard Jones and prepares abstracts of British medical papers which it circulates throughout the world. These are sent in the language of the receiving country and have been widely reproduced abroad. To supplement this service the council now issues a periodical, the *British Medical Bulletin*, with the object of providing a guide to medical thought in Britain. It consists mainly of summaries of recent papers grouped according to subject. The *Bulletin* is not for general distribution to the medical profession, but other journals are invited to reproduce its abstracts. The address of the *Bulletin* is 3 Hanover Street, London, W 1.

BRAZIL

(From Our Regular Correspondent)

June 21, 1943.

Number of Practicing Physicians in Brazil

According to available information for 1942 there are in this country 18,213 practicing physicians. As the area of the country is 3,287,595 square miles and the population just a little above 43 million, there are therefore an average of about 180 square miles and 2,361 persons to be served by each physician, which corresponds to the rate of 42.35 per hundred thousand of population. But, as the density of population varies widely from one state to another (there are twenty states, the Acre Territory and the Federal District), and as the economic development of the several regions of the country is different, the rate of physicians per hundred thousand of population varies also significantly. The highest density occurs in the Federal District (Rio de Janeiro city and its suburbs and rural environs with a total of about 450 square miles), where there are 2,995 physicians, corresponding to a rate of 161 per hundred thousand, or 0.15 square mile per physician. Of course, in the city proper the concentration is much higher, the largest part of these physicians serving in the 60 square miles of the urban area. Next to the Federal District comes the state of São Paulo, the richest section of the country, where there are 6,316 physicians, corresponding to the rate of 83.1 per hundred thousand, or about 15 square miles per physician, for a state population of 7.6 million. In the city of São Paulo, capital of the state, there are about 1,800 physicians for the population of 1.4 million, scattered over an area of about 40 square miles. In the third, fourth and fifth places stand Rio Grande do Sul, Bahia and Rio de Janeiro, states respectively with 1,785, 1,736 and 772 physicians, or the rates of 51.0, 43.4 and 40.0 per hundred thousand. In the last three places stand the Acre Territory and the states of Piauhy and Maranhão, which have respectively 10, 96 and 83 physicians, corresponding to the rates of 12.0, 9.9 and 7.5 per hundred thousand. The equatorial Amazon basin, where rubber is extracted and where malaria is intensely prevalent, includes the Acre Territory and the states of Pará and Amazonas, with the huge aggregate of 1,288,500 square miles and a population of only 1,520,000. In this vast area there are but 241 physicians, or a rate of 15.9 per hundred thousand and 5,346 square miles per physician.

Tuberculosis in Southern Brazil

The 1941 annual report of Dr. Bonifacio Costa as commissioner of health for Rio Grande do Sul, the southernmost state of Brazil, gives information concerning the incidence of pulmonary tuberculosis in that state, which has a temperate climate. In Porto Alegre, the largest city of the state, with a population of 275,000, the percentages of cases of active pulmonary tuberculosis have been found with the aid of both clinical and x-ray examinations to be 1.45 among 8,893 state officers and employees, 0.60 among 26,294 commercial clerks and food-handlers, 1.55 among 1,289 pregnant women visiting antepartum clinics, 1.8 among 1,374 school children and 4.20 among 333 workers of the cotton textile industry. In Pelotas (population 105,000) the percentages of active cases of pulmonary tuberculosis have been found to be 0.22 among 2,671 school children, 1.08 among 460 police officers, 0.46 among 4,064 food-handlers, 2.60 among 244 school teachers, 1.61 among 558 pregnant women visiting antepartum clinics and 1.08 among 463 industrial workers of several kinds. In reference to the city of Rio Grande (population 62,000), the report states, without giving the absolute numbers, the percentages are 0.80 for food-handlers and 2.50 for school children. The Pirquet reaction has given the following percentages of positivity in Porto Alegre: 17.5 among 525 children from 0 to 24 months of age, 41.2 among 342 children from 2 to 6 years of age and 53.7 among 374 children from 7 to 14 years. The examination of

large groups of persons only with the aid of the miniature 35 mm. film as suggested by De Abreu, which as a rule furnishes higher percentages, has given 7.40 per cent of positivity in Rio Grande and 4.70 per cent among 14,803 persons in Pelotas. In seventy of the eighty-eight counties of the state, the mortality from tuberculosis is considered moderate (below 100 per hundred thousand) but varies between 100 and 300 per hundred thousand in the rest of the state. In Porto Alegre it stays at the average level of 250 per hundred thousand. These figures contrast with those for the northern section of Brazil, where the incidence of tuberculosis is generally higher.

Improvements in the Misericordia Hospital

A new annex to the great old hospital of the Santa Casa de Misericordia in the downtown section of Rio de Janeiro was opened not long ago. The annex, built with money donated by the Associated Dailies of Brazil under the presidency of Mr. Assis Chateaubriand, has a large surgical unit, sixteen outpatient clinics, a pathologic institute and a physical therapy institute. The surgical unit is under the direction of Dr. Paulo Cesar de Andrade. The outpatient clinics are under the direction of Dr. A. Almeida Silva to give free and low cost medical care. The pathologic institute, under the direction of Dr. Oswino Penna, is provided with all the facilities to perform chemical, bacteriologic, parasitologic, anatomopathologic and endocrinologic examinations. The section of necropsies and histopathologic examinations is considered one of the best in South America. The physical therapy institute is equipped with a powerful x-ray apparatus and 500 mg. of radium.

The sum donated by the Associated Dailies of Brazil will permit also the granting every year of several fellowships to physicians of the interior of the country to come to Rio de Janeiro to take postgraduate courses in the different specialties of medicine and surgery.

Four New Cases of Quartan Malaria

Dr. Firmino O. Lima of the Malaria Division of the State Department of Health of São Paulo described 4 new typical cases of quartan malaria in patients of that state. Cases of quartan malaria, although relatively rare, are found everywhere, but the prevalence of the disease varies in different regions of the globe depending on favorable influences, perhaps convenient vectors, not yet well recognized. This is particularly true in the case of Brazil, where the quartan type is very rare despite the large importation of the quartan parasite in Italian, Spanish and Portuguese immigrants. Four cases from the state of São Paulo had been previously described by A. Guimarães and M. Cortez, by Prado and Carvalho and by Amaral, Coutinho and Quaglia. The 4 new cases described by Dr. Lima are from the same Itaporanga County where Amaral, Coutinho and Quaglia in 1942 found 2 of the previous cases from the state of São Paulo. For Brazil as a whole, perhaps less than 0.5 per cent of the cases of malaria are of the quartan type.

Prices of Pharmaceutic Preparations

The Division of Prices of the Administration of Economic Mobilization has begun to study the problem of controlling the prices of the pharmaceutic preparations, as they are rapidly rising since a short time ago. All the manufacturers of therapeutic preparations of any kind are obliged to present within thirty days a roster of the respective products, with the description of their characteristics and particulars about their manufacture and distribution. Regarding the products of foreign origin, the authorized representatives of the manufacturers in Brazil are also obliged to file the same information as well as the prices at the country of origin, the existing stocks and other pertinent particulars. The products concerning which information is incomplete or misleading will not be sold until correct information has been filed. The manufacturer who furnishes misleading or untruthful information will be prosecuted according to law.

AUSTRALIA

(From Our Regular Correspondent)

June 8, 1943.

Emergency Rations in the New Guinea Campaign

The lives of many soldiers in the New Guinea campaign have been saved by army emergency rations. The ration tins, 12 ounces in weight, are dropped by planes over isolated areas, many of which are cut off for protracted periods from other sources of supply. The ration consists of a canned meat and vegetable food which increases its bulk fourfold when mixed with water, and a compressed fruit block consisting of apricots, sultanas, currants, sugar and peanuts. Malted milk tablets and tablets of tea, sugar and salt are also included.

Earlier in the Papuan campaign our men were forced to eat unheated food. They could not light a fire because the ground was too damp or because the smoke would have invited attention from enemy snipers. Now they are being supplied with "solidified alcohol" tablets and crown ring cookers. These cookers, which do not rattle and are small enough to fit into mess kits, give off no smoke and are not put out by wind and rain. They are proving of inestimable benefit to men on service in forward areas.

Army Ration on Nutritional Basis

Today the army receives an expertly balanced ration. When Allied soldiers first arrived here they had a separate diet chart from the Australians. The two were soon brought to a common basis by officials of the Council for Scientific and Industrial Research collaborating with the Australian director of army catering (Lieut. Col. Sir Stanton Hicks) and United States Army officials. For the past year the Royal Australian Air Force has been placed on the same catering basis as the army.

The chart for Allied Forces in the Southwest Pacific allows for certain differences in taste—Americans have been found to drink more coffee and Australians more tea; Americans have a wider range of condiments and show a greater preference for ham. It is not always possible to get fresh meat to men in the forward areas, but the preserved lines include canned sausages, dehydrated mutton, bacon and pork packs in addition to the popular meat and vegetable ration. Egg powder, tomato juice and fresh or canned fruits form part of the regular army diet for the forward areas.

Control of Proprietary Medicines

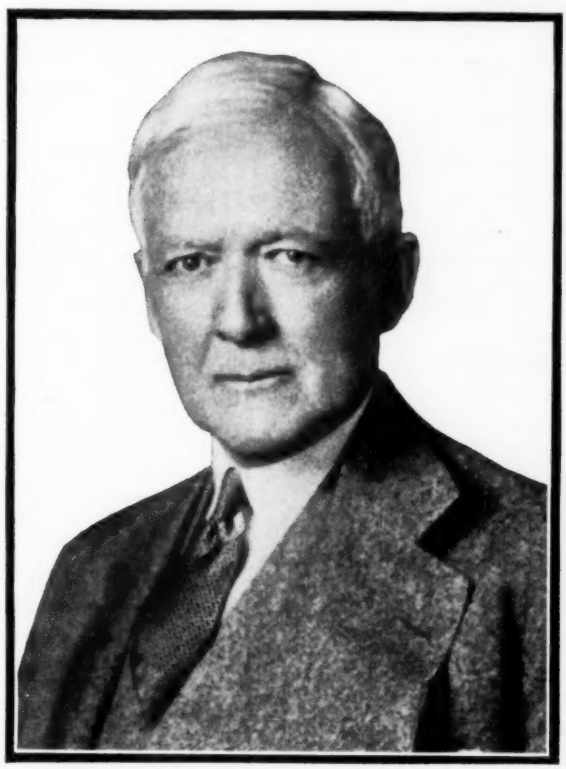
Rigid control of the sale of proprietary medicines has recently been instituted by National Security (Proprietary Medicines) Regulations. The principal objects of the regulations are the prohibition of the manufacture or sale of any medicines which fail to justify their claim, and the compulsory variation of formulas when this is deemed necessary to conserve essential drugs. Advertising of proprietary medicines is virtually prohibited, the only particulars which may be exhibited or published in any form to promote the sale of a proprietary medicine being its trade name, description of the article in not more than ten words, the price, and the name of the manufacturer or distributor. The limitation applies to all written statements concerning proprietary medicine, including advertisements in the press, handbills, window displays and broadcast advertisements. Another section has the effect of prohibiting the employment of travelers or detailists. The definition of "proprietary medicines" given in the regulations is extremely wide and includes any medicines to be held out by advertisement, label or otherwise in writing, to be efficacious for the prevention, cure or relief of any malady, ailment, infirmity or disorder affecting human beings, or for increasing height, increasing or reducing weight or increasing personality or reproductive capacity.

Deaths

Lewellys Franklin Barker ✠ Baltimore, emeritus professor of medicine at Johns Hopkins University School of Medicine, former professor of anatomy at the University of Chicago, former Vice President of the American Medical Association and medical leader, died on July 13 at Baltimore at the age of 75 after a long illness.

Dr. Barker was born in Norwich, Ontario, Canada, on Sept. 16, 1867. He studied at the University of Toronto and the Universities of Leipzig, Munich and Berlin. After work in anatomy and pathology in Johns Hopkins from 1894 to 1899 Dr. Barker became associate professor of anatomy at the University of Chicago, returning to Johns Hopkins for a year in pathology, and then became professor and head of the department of anatomy at Rush Medical College, Chicago, 1900-1905. Dr. Barker was professor of medicine at the Johns Hopkins University and chief physician at the Johns Hopkins Hospital from 1905 to 1913. He then became emeritus professor of medicine at Johns Hopkins University and visiting physician to the Johns Hopkins Hospital.

A long and eminent career as an investigator and clinician resulted in many contributions to the medical literature. Dr. Barker's early books were principally in the field of anatomy and included a book on the nervous system published in 1899, a translation of Spalteholz's Hand Atlas of Human Anatomy in 1900 and a Laboratory Manual of Human Anatomy in 1904. In 1896 Dr. Barker described a unique case of "circumscribed unilateral and elective sensory paralysis," analogous in its bearings to the observations of Head. In 1909, with Hanes, he described the eye signs in chronic nephritis. With Sladen he made interesting clinical and pharmacologic studies of the autonomic nervous system. He published an exhaustive treatise on clinical diagnosis in 1916. In more recent years he has been the author of several popular works on medical subjects. With N. B. Cole he wrote a book for the public on blood pressure in 1924. His book "The Young Man and Medicine" was written primarily for medical studies. A monograph on psychotherapy appeared in 1940. Dr. Barker's autobiography, "Live Long and Be Happy: Time and the Physician," appeared in 1942.



LEWELLYS FRANKLIN BARKER, M.D., 1867-1943

The recipient of many honorary degrees including the honorary M.D. from the University of Toronto and the LL.D. by Queen's University at Kingston, Ontario, and McGill University at Montreal, Dr. Barker was also much in demand as a special lecturer. His lectures included the Beaumont Lectures of Wayne County Medical Society, Detroit, 1935, the annual Alpha Omega Alpha lecture at Jefferson Medical College in 1932 and the first M. L. Rhein Memorial Lecture of the First District Dental Society of the State of New York in 1933.

Dr. Barker was First Vice President of the American Medical Association, 1916 to 1917, chairman of the Section on the Practice of Medicine, 1921 to 1922, and member of the House of Delegates in 1909. He has been president of the Association of American Physicians, the American Neurological Association, the Southern Medical Association, the Association for Study of Internal Secretions and was one of the vice presidents of the Pan American Medical Association in 1933. He has been, in addition, an active or honorary member of many other medical societies in this and other countries.

Dr. Barker was a man of strong personality whose interests extended beyond pure medical science into all the aspects of medical life and his community. Only a man of tremendous energy as well as ability could have accomplished so much.

Charles Francis Gormly ✠ Providence, R. I.; Tufts College Medical School, Boston, 1909; immediate past president, in 1941 vice president and chairman of the committee on industrial health of the Rhode Island Medical Society; president of the Providence Medical Association, 1934-1935; at one time chairman of the Rhode Island Board of Examiners in Medicine; fellow of the American College of Physicians; member of the American Heart Association and the New England Heart Association; specialist certified by the American Board of Internal Medicine; served with the American Expeditionary Forces in France during World War I with the rank of lieutenant colonel; lieutenant colonel in the medical reserve corps of the U. S. Army not on active duty; had been deputy director of the state medical aid division of civilian defense; as physician in chief at the Rhode Island Hospital organized Evacuation Hospital number 48, now serving abroad; consulting physician to the Butler, Charles V. Chapin and Providence Lying-In hospitals, Providence, State Hospital for Mental Diseases and State Infirmary, Howard; appointed by the governor a member of the advisory council to the state department of health; delivered the George W. Gay Lecture on Medical Ethics on the "Measure of a Physician's Greatness" at the Tufts College Medical School in 1941; at the annual meeting of the state medical society in June 1943 a portrait of him was presented to the society; the faculty of the school of nursing of the Rhode Island Hospital established in 1943 the Charles F. Gormly Award to be given to the outstanding senior student nurse for the furthering of her professional interest; in January 1943 was presented with the medal of award and accompanying citation of the Rhode Island State Dental Society in acknowledgment of many services to the medical and dental professions; aged 57; died, June 26, of carcinoma of the lung.

James Gibson Logue ✠ Williamsport, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1914; specialist certified by the American Board of Pediatrics, Inc.; member of the American Academy of Pediatrics; past president of the Lycoming County Medical Society; served as president of the Lycoming County Tuberculosis Society and director of the Lycoming County Crippled Children's Society; served in the medical corps of the U. S. Army during World War I; medical director of the South Williamsport Office of Civilian Defense; physician to the Pennsylvania Children's Aid Society; chief of the pediatric staff and member of the board of managers of the Williamsport Hospital, where he died, March 25, of aplastic anemia, aged 53.

Clifford U. Collins ✠ Peoria, Ill.; Physio-Medical College of Indiana, Indianapolis, 1891; Marion-Sims College of Medicine, St. Louis, 1892; member of the House of Delegates of the American Medical Association in 1912; specialist certified by the American Board of Surgery; member and formerly vice president of the Western Surgical Association; served as president of the Peoria Medical Society; one of the members of the advisory board of the state department of health under three different governors; organized the Collins Clinic; past president of the Peoria Association of Commerce and the Rotary Club; aged 75; on the staff of St. Francis Hospital, where he died, May 26.

Arthur Augustus Spoor, Muskegon, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; member of the Michigan State Medical Society; state bacteriologist and director of the laboratory of the Michigan State Board of Health from 1914 to 1918; at one time instructor in clinical microscopy and clinical pathology at the Creighton University College of Medicine and pathologist to St. Joseph's Hospital, Omaha; served as pathologist on the staff of the

Mercy Hospital; formerly a member of the city board of health; aged 69; died recently of heart disease at Oaxaca, Mexico.

William Calvin Kennerdell Berlin, Denver; University of Wooster Medical Department, Cleveland, 1895; member of the Colorado State Medical Society; served during the Spanish-American War; member of the staff of St. Anthony's Hospital; aged 71; died, April 28.

Bertha Breeze Brainard, Jamestown, N. D.; Rush Medical College, Chicago, 1932; member of the North Dakota State Medical Association; diplomate of the National Board of Medical Examiners; in 1940 appointed in charge of the student health service at Oregon State College, Corvallis; served as health officer of Jamestown; state president of the American Association of University Women; aged 49; died, March 12, in Rochester, Minn., of hepatic abscesses and thrombosis of the portal vein.

Louis Cohen, New York; Eclectic Medical College of the City of New York, 1903; formerly on the staff of the New York Hospital; aged 74; died, April 26, of coronary occlusion and arteriosclerosis.

Ora O. Dawson, Wayne, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1912; member of the Oklahoma State Medical Association; aged 58; on the associate staff of the Wesley Hospital, Oklahoma City, where he died in April of coronary thrombosis.

John Walter Dennis, Chicago; Loyola University School of Medicine, Chicago, 1922; formerly health officer of Hamilton County, Tenn.; served on the staff of St. Elizabeth Hospital; aged 47; died, May 24, of bronchopneumonia.

Patrick John Donahoe, Utica, N. Y.; Albany (N. Y.) Medical College, 1905; member of the Medical Society of the State of New York; for many years a member and at one time president of the staff of St. Elizabeth Hospital; attending physician at St. John's Orphan Home; city physician; aged 63; died, May 4, of coronary thrombosis.

Frederick Leslie Ecker, Parkers Prairie, Minn.; Chicago College of Medicine and Surgery, 1913; aged 68; died, May 3, in Dalton, Ga., of acute coronary thrombosis.

Marvin D. Fitch, Columbus, Ohio; Medical College of Ohio, Cincinnati, 1897; aged 73; died, April 8.

James Thomas Gaines, Crossville, Ala.; University of Alabama School of Medicine, 1913; member of the Medical Association of the State of Alabama; president of the De Kalb County Farm Bureau; chairman of the board of trustees of the Crossville High School; aged 54; died, April 17, of coronary thrombosis.

Archibald G. Henderson ✠ Leonardville, Kan.; Missouri Medical College, St. Louis, 1899; aged 78; died, March 14, of heart disease.

John Herbert Johnson, Cambridge, Mass.; Harvard Medical School, Boston, 1901; served on the staffs of the McLean Hospital, Waverly, Boston Floating Hospital and the Medford (Mass.) Hospital; aged 71; died, April 30, of cardiorenal disease.

Christ William Kanne, Faribault, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; member of the Minnesota State Medical Association; aged 67; died, March 18, at Minneapolis of thrombophlebitis, pulmonary embolism and pulmonary infarction.

Albertus L. Lloyd, Rapid City, S. D.; Baltimore Medical College, 1898; served on the staffs of St. Joseph's Hospital, Deadwood and St. John's Hospital; aged 76; died, March 27, of cerebral hemorrhage.

Joseph Charles McFate ✠ Meadville, Pa.; Western Reserve University Medical Department, Cleveland, 1905; past president of the Crawford County Medical Society; a captain in the medical corps of the U. S. Army during World War I; served on the staff of the Meadville City Hospital; aged 66; died, April 27, of hypertensive heart disease.

Edward George Meter ✠ Reading, Pa.; Medico-Chirurgical College of Philadelphia, 1897; specialist certified by the American Board of Radiology, Inc.; member of the American Roentgen Ray Society and the American College of Radiology; aged 67; chief, radiology department, Reading Hospital, where he died, March 20, of acute coronary occlusion.

William Sawyer Newell, Washington, D. C.; Columbian University Medical Department, Washington, D. C., 1895; member of the Medical Society of the District of Columbia; fellow of the American College of Surgeons; ophthalmic surgeon to the Central Dispensary and Emergency Hospital; aged 69; died, June 22, in the Garfield Memorial Hospital.

Myron E. Osterhout, Cornwall, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1922; member of the Medical Society of the State of New York; a member of the board of education; on the staff of the Cornwall Hospital; aged 49; died, April 16, of coronary thrombosis.

John David Pate, Duncan, Okla. (licensed in Oklahoma under the Act of 1908); aged 75; died, April 23.

Arthur Colby Robbins ✠ Garden Grove, Calif.; College of Medical Evangelists, Los Angeles, 1923; aged 50; died, April 21.

Reginald W. H. Rollings, New York; New York Homeopathic Medical College and Flower Hospital, New York, 1910; aged 57; on the staff of the Flower and Fifth Avenue Hospitals, where he died, April 27, of carcinoma of the pancreas.

Herman Schlaff ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1912; served on the staffs of the Jefferson and the Northern Liberties hospitals; aged 61; died, March 6, of acute cardiac dilatation.

Walter Henry Scudder, Litchfield, Ohio; Western Reserve University Medical Department, Cleveland, 1891; member of the Ohio State Medical Association; aged 82; died, April 30.

William Alexander Sim, Quincy, Ill.; Rush Medical College, Chicago, 1902; member of the American Psychiatric Association; served on the staffs of the Veterans Administration Facility in Sheridan, Wyo., and St. Cloud, Minn.; aged 65; died, April 21, of chronic leukemia.

Edwin M. Snyder, Roscommon, Mich.; Michigan College of Medicine and Surgery, Detroit, 1889; aged 76; died, April 2, of arteriosclerotic heart disease.

William Kenney Terriberry, Binghamton, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1907; formerly instructor of physiology at his alma mater; at one time medical examiner for the Mutual Life Insurance Company and associated with the Standard Oil Company at Bayonne, N. J.; aged 62; died, April 22, in the Binghamton City Hospital of pneumonia and heart disease.

James Harvey Van Buren, Elmira, N. Y.; Albany Medical College, 1905; aged 63; died, April 23, of chronic pulmonary tuberculosis and toxemia.

Isidore S. Zimmerman ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1926; on the staffs of the Israel Zion, Kings County and Jewish hospitals; examiner for the local draft board; aged 41; died, April 21.

DIED WHILE IN MILITARY SERVICE

James Morgan Minter ✠ Medical Director, Rear Admiral, U. S. Navy, Washington, D. C.; University of the South Medical Department, Sewanee, Tenn., 1903; appointed an assistant surgeon in the medical corps of the U. S. Navy in 1906; became a captain in 1927 and a rear admiral in 1941; served during World War I; formerly sanitary engineer to the republic of Haiti; in command of naval hospitals at Pearl Harbor and San Diego; senior medical officer at the Great Lakes Naval Training Station and at the Naval Academy at Annapolis; held the Victory Medal and the Navy Expeditionary Medal; fellow of the American College of Surgeons; aged 60; died, May 11, in the U. S. Naval Hospital, Bethesda, Md., of arteriosclerotic coronary heart disease.

Theodore Leroy Chamberlin ✠ Assistant Surgeon, U. S. Public Health Service, Hartford, Conn.; Yale University School of Medicine, New Haven, 1940; diplomate of the National Board of Medical Examiners; commissioned assistant surgeon in the reserve corps of the U. S. Public Health Service in April 1942; assigned to U. S. Maritime Training Station, New London, Conn.; commissioned assistant surgeon in the regular corps in July 1942 and assigned to U. S. Marine Hospital, Chicago; in January 1943 was assigned to Curtis Bay, Baltimore, aboard Coast Guard Cutter *Modoc*; aged 28; was killed, May 1, in an airplane accident overseas.

Walter Jackson Lackey ✠ Fallston, N. C.; University of Virginia Department of Medicine, Charlottesville, 1928; on the staff of the Shelby (N. C.) Hospital; first lieutenant in the medical corps, Army of the United States, stationed at Fort Jackson, S. C.; aged 36; burned to death, May 1, at his home in Columbia, S. C., when the mattress of his bed caught fire from a lighted cigaret.

Correspondence

TYPHUS FEVER IN EUROPE

To the Editor:—Since reading your editorial of June 5 I have received from Geneva the report of Yves M. Biraud on "The Present Menace of Typhus Fever in Europe and the Means of Combating It." One fully realizes the great difficulty in summarizing this work in a short article or editorial. It, however, would seem advisable to comment on one statement of Dr. Biraud which you quote in your editorial to the effect that "As regards live vaccines the new method of Blanc (biliated flea virus) and that of Laigret-Durand (mouse brain) are the only ones that can be considered for the preparation of vaccine intended for Europeans. . . ."

Biraud gives much reported evidence of the value and earlier use of the Blanc vaccine, which consists of a dried murine virus in feces of infected fleas to which ox bile is added before inoculation. Among these, he states, "mention should be made of the observations reported by Gonnet (1942), who in the Oujda region, where a vaccination campaign with the dried vaccine had been carried out in May 1941, saw cases (115) of benign typhus about mid-July in the tribes vaccinated. Some of these cases were of very short duration and suggested to him late vaccinal reactions. In 6 cases admitted to hospital, 5 of which were military cases, he diagnosed vaccinal murine typhus." Biraud adds "it is hoped, therefore, that many and precise observations will be published to verify its innocuousness for Europeans. . . . Owing to present circumstances he is not in possession of the most recent observations concerning the use of live vaccines in North Africa during the last epidemic year."

Some of these very recent reports reveal that many individuals inoculated with the Blanc live vaccine have developed typhus fever following the vaccination.

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SULFADIAZINE CRYSTALLURIA AND THE INFLUENCE OF p_H ON THE THERAPEUTIC EFFICIENCY OF SULFONAMIDES

To the Editor:—In the editorial comment "Prevention of Sulfadiazine Crystalluria" (THE JOURNAL, May 29) the question is raised whether alkalization modifies the therapeutic efficiency of sulfadiazine.

The relationship between p_H and sulfonamide activity has been described in a paper by Fox and Rose entitled "Ionization of Sulfonamides" (*Proc. Soc. Exper. Biol. & Med.* **50**:142 [May] 1943). Experimental data were presented showing that antibacterial activity resided in the sulfonamide anion rather than the unionized molecule and that raising the p_H increased the activity of the sulfonamides in proportion to the increased ionization that resulted. In addition, the greater potency of sulfadiazine and sulfathiazole as compared to sulfapyridine and sulfanilamide was shown to be a consequence of the fact that at physiologic p_H sulfadiazine and sulfathiazole are far more extensively ionized than sulfapyridine and sulfanilamide.

Similar results have been reported by Schmelkes and his co-workers (*Proc. Soc. Exper. Biol. & Med.* **50**:145 [May] 1942) and by Cowles (*Yale J. Biol. & Med.* **14**:599 [July] 1942). The importance of these studies to the mechanism of sulfonamide action has been commented on in an editorial "Basicity and Drug Action" (*Lancet* **2**:648 [Nov. 28] 1942). Subsequently Bell and Roblin extended these observations to a variety of sulfonamide derivatives (*J. Am. Chem. Soc.* **64**:2905 [Dec.] 1942).

These studies have now been applied to the problem of the local use of soluble sulfonamides in war wounds and burns (work done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and Columbia University). Bedside p_H measurements (with the glass electrode) of infected wounds have shown values ranging from p_H 5.5 to 6.5. In this acidic range from 10 to 100 times more sulfanilamide is needed for bacteriostasis but only 1 to 4 times more sulfathiazole or sulfadiazine is required. Since the solubility of these drugs is likewise reduced in acidic exudates, their sodium salts have been used locally with salutory results; i. e., prompt control of infection with no tissue irritation (Fox, C. L.: Sodium Salts of the Sulfonamide Compounds, *Arch. Surg.* **45**:754 [Nov.] 1942; THE JOURNAL, Dec. 26, 1942, p. 1401; *Bull. New York Acad. Med.*, to be published).

This principle of increasing ionization (soluble salt formation) with increasing p_H has been applied clinically to the prevention of renal precipitation and full details have previously been reported from this laboratory: Hydrogen Ion Concentration and the Solubility of Sulfonamides in Urine (with Dr. Jensen, *J. Urol.* **49**:334 [Feb.] 1943); the Prevention of Renal Obstruction During Sulfadiazine Therapy (with Dr. Jensen and Lieutenant Mudge, THE JOURNAL, April 3, 1943, p. 1147).

CHARLES L. FOX JR., M.D., New York.
Department of Bacteriology, Columbia University
College of Physicians and Surgeons.

WELFARE OF LABORATORY ANIMALS

To the Editor:—As a result of recent correspondence with a number of workers engaged in experiments on animals, I have become aware that there is a strong and widespread desire for experience to be pooled so as to enable the maximum of consideration to be shown for the feelings of laboratory animals. With the view of helping to give effect to this desire we have supplied to 130 laboratories, on request, a copy of the recent book Veterinary Anaesthesia by Prof. J. G. Wright, F.R.C.V.S.

At the suggestion of a number of research workers we are proposing further to compile information relating to (1) anesthesia of rats, rabbits, guinea pigs and other animals not covered by Professor Wright's book, (2) methods of killing laboratory animals, (3) living conditions, housing, diet and so on and to invite a small number of experienced men to act as a panel for approving or amending the resulting compilation. We should be most grateful to any readers of THE JOURNAL who would get into touch with us with a view to communicating to us any views or suggestions they may be able to offer.

The breeding of laboratory animals is regularly discussed among research workers, and many of them think it would be desirable to put it as far as possible into the hands of trained personnel. We consider that this plan is likely to benefit the animals, since it will offer an opportunity of bringing their living conditions under the supervision of responsible persons whose interest is not purely mercenary.

F. JEAN VINTER,
284, Regent's Park Road,
Finchley, London, N.3.
Secretary, UFAW (The Universities
Federation for Animal Welfare).

HYPERTENSIVE TOXEMIA OF PREGNANCY

To the Editor:—Dr. Lewis Dexter and his associates in a paper published in The Journal, May 15, enumerate a considerable number of factors which "toxemia is not primarily due to," among them overactivity of the posterior pituitary gland. The past three years have witnessed great clarification in this problem.

Since 1918 I have advocated the tenet that, in the causation of the syndrome termed late toxemia of pregnancy, consideration of hyperdynamic posterior pituitary principles may bring us within measurable distance of the realities of the situation. In 1933 it was argued that a number of seemingly unrelated investigations have converged so that it may be reasonably concluded that toxemia represents disordered autonomic physiology as the result of undue posterior pituitary (pitressin) stimulation (*Am. J. Obst. & Gynec.* **26**:311 [Sept.] 1933). Efforts to identify in the blood an excess of the pressor-antidiuretic pituitary principle stirred much comment with denials of positive findings in late toxemia in preponderance. Reference to such negative findings and the failure in their investigations to reproduce in rabbits and rats hypertension and specific kidney lesions by posterior pituitary injection are the premises on which Dr. Dexter and his associates negate the etiologic importance of the postpituitary gland. Opposed to their position is an array of facts in favor of my view. The striking similarity between the cardinal features of blood chemistry in eclampsia and in experimental hyperpituitarism in dogs, the consistently present melanophore expanding principle in the blood in toxemia, as well as the corroborated clinical evidence of an increased susceptibility of toxemic individuals to pitressin, had first call. In extensive studies Knepper found changes in various organs as the result of repeated use of posterior pituitary injection yet was able faithfully to reproduce the well known lesions in vital organs in eclampsia by first parenterally administering proteins and subsequently posterior pituitary injection to laboratory animals. The biologic significance of the well known detachment into the maternal circulation of chorionic tissue, fetal proteins, thus apparently paving the way for the susceptibility of vital organs to the effect of pitressin was illustrated. Finally, atony and dilatation of the ureter, known to be constant concomitants of gestation and amenable to the influence of the posterior pituitary principle (*Bull. Johns Hopkins Hosp.* **42**:118 [March] 1928; *J. Urol.* **20**:413 [Oct.] 1928), are unusual in preeclamptic toxemia, suggesting the effect of the pituitary factor. Chunilal Mukherjee recently elaborated on these aspects of the problem and demonstrated in the blood the principles responsible for the vasopressor, antidiuretic and melanophoric effect in toxemia (*J. Obst. & Gynaec. Brit. Emp.* **48**:586 [Oct.] 1941), while Griffith produced in rats permanent hypertension by small repeated doses of pitressin injected intraperitoneally. The most recent experimental studies of Netzel shed further light on the transcendent importance of pitressin in the origin of liver and kidney lesions in eclampsia (Vascular Spasm, University of Illinois Press, 1943).

Current interest attaches to the recent discovery of the existence during normal gestation of a delicately balanced equilibrium between a set of factors effecting arteriolar hypertonicity and placental acetylcholine, and the dislocation of this equilibrium in toxemia resulting in the unopposed action on the vascular tree of naturally secreted vasopressin (*West. J. Surg.* **49**:615 [Nov.] 1941). The investigations of C. Heymans revealing the automatic regulation of blood pressure by the action of pressoreceptors and their ready response to pressor changes and to acetylcholine serve to supply an additional key consistent with these views, which aim to convey a unifying and constructive concept of the pattern of the hypertensive toxemia of pregnancy.

J. I. Hofbauer, M.D., Cincinnati.

RED CELL TRANSFUSIONS

To the Editor:—I read with interest the report of Dr. Howard L. Alt on "Red Cell Transfusions in the Treatment of Anemia" (The Journal, June 12, p. 417). I fully agree with the author regarding the usefulness of red cell transfusions but would like to point out the desirability of utilizing red cells in the form of concentrated suspensions rather than suspensions diluted with isotonic solution of sodium chloride. After a considerable trial we abandoned the addition of saline solution following aspiration of plasma both on account of technical disadvantages as well as because the addition of isotonic solution of sodium chloride to the red cells which have been stored in citrate-saline solution results in increased erythrocytic fragility and often detectable hemolysis. But we add, preferably at the time of collection of blood, 25 cc. of a 50 per cent dextrose solution for a better preservation of red cells. The method in use at our hospital has been described elsewhere (Blum, Leon L.: The Present Day Status of Combined Blood-Plasma Bank, with Reference to the Use of Concentrated Red Cell Suspensions, *J. Indiana M. A.* **36**:187 [April] 1943). We have used concentrated red cell suspensions (erythrocyte concentrates) in various anemic states after three weeks of preservation with dextrose with fully satisfactory clinical and hematologic results. There were no untoward reactions whatever. It is my impression that the percentage of reactions following red cell transfusions is even lower than that following whole blood, but a larger series of observations is needed to justify any definite conclusions.

Quantitative fragility tests performed on preserved red cell suspensions revealed a satisfactory state of preservation after three weeks.

In spite of the fact that these concentrated red cell suspensions are of rather heavy consistency, a satisfactory flow can be insured in most cases with an increase in height in the level of the bottle. We did not find it necessary to incorporate a Riddel's pump for administration of suspensions, as suggested by Watson (*Lancet* **1**:107 [Jan. 23] 1943).

I feel that erythrocyte concentrates represent the method of choice for red cell transfusions and that the use of red cell transfusions in anemic states should be greatly encouraged so that they will come into common use in civilian and military practice.

Leon L. Blum, M.D., Terre Haute, Ind.
Director, Blood-Plasma Bank, Union Hospital.

FAMILIAL TUBEROUS SCLEROSIS

To the Editor:—Will you enter our opinion as to diagnosis on the father and son described under the heading of "Familial Tuberous Sclerosis (Epiloia) Without Adenoma Sebaceum" in The Journal, June 12?

From the data presented in this article it would seem to us that the entire clinical picture in case 1 could best be explained by the diagnosis of toxoplasmic encephalitis. This diagnosis is possibly applicable also in case 2, but in view of the absence of ocular abnormalities or widespread calcified lesions in the cerebrum there is insufficient evidence for this or any other diagnosis. There are several reasons why the diagnosis is of some moment in such cases, not the least of which is the fact that toxoplasmosis may lend itself to therapy rather better than tuberous sclerosis.

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Visiting Neurologist, Boston City Hospital.

Charles D. Aring, M.D., Cincinnati.
Attending Neurologist, Cincinnati General Hospital.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, July 17, page 829.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 20-22. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * Nov. 3-4. Sec., Dr. D. L. Owens, Harrison.

CALIFORNIA: *Oral.* Los Angeles, Aug. 9. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento.

CONNECTICUT: * *Reciprocity.* Hartford, July 27. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DISTRICT OF COLUMBIA: * Washington, Nov. 8-9. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, Oct. 12-14. Superintendent of Registration, Department of Registration and Education, Mr. Philip M. Harman, Springfield.

INDIANA, Indianapolis, Sept. 14-16. Sec., Board of Medical Registration & Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

IOWA: * Iowa City, Dec. 27-29. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 14-15. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Nov. 15-17. Sec., Dr. A. T. McCormack, 620 S. Third St. Louisville.

MARYLAND: Baltimore, Dec. 14-17. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore.

MINNESOTA: * Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, September. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 5-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Aug. 2. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Board of Registration in Medicine, Dr. D. G. Smith, State House, Concord.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * *Endorsement.* Santa Fe, Oct. 11-12. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

OHIO: *Endorsement.* Columbus, Oct. 7. *Written.* Columbus, Dec. 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

TEXAS: Galveston, Aug. 2-4. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Dec. 15-17. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 14-17. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WYOMING: Oct. 4-5. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

MICHIGAN: Detroit, Aug. 6-7. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, Oct. 5-6. Sec., Dr. J. C. McKinley, 126 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Oct. 30. Sec., State Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 18. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

WISCONSIN: Madison, Sept. 18. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Chronic Osteomyelitis Following Extraction of Tooth.—Marquess, a dentist practicing in Fresno, Calif., in the employ of Kennedy, another dentist, was consulted by the plaintiff, July 22, 1938, relative to a toothache. He discovered a deep carious condition in the second lower left molar, which he cleaned and into which he inserted a temporary filling, instructing the patient to return in four days or sooner if suffering from pain. After returning home the patient became feverish and suffered such pain that she was confined to bed. Three days later she was taken to the dentist's office. The tooth was extracted after two injections of cocaine had been given—one "to effect a mandible block" and the other in the tissues adjoining the tooth. According to the patient, the dentist "did not apply iodine or any other solution to her gums before injecting the cocaine," nor did he take or recommend the taking of a roentgenogram of her teeth. According to the dentist, there was no infection of the tooth or in the socket from which it was extracted. After the extraction, the gums were sutured and the patient was instructed to wash her mouth with warm salt water and to apply ice packs. She was then taken home and put to bed. The next day she returned to the dentist's office. Her jaw then was swollen and she was suffering much pain. What the dentist did on this visit is not made clear in the reported opinion. She returned home to bed, but her condition became worse and her family physician was called and found her temperature above normal and her jaw infected. Under his treatment her condition was so improved that she was taken to see the defendant dentist again on July 30, when he advised her to consult a specialist, which was done. Subsequently she was hospitalized for fourteen days during the first four of which she was in a semicomatose condition. Abscesses which had formed inside the lower jaw beneath the socket from which the tooth had been extracted and under the chin were lanced from the outside and drained. The gum was also lanced and drained. In January 1939 a diagnosis of chronic osteomyelitis of the left mandible was made at a hospital in San Francisco. On March 27 an incision was made under the jaw at the site of the previous lancing and bone and granular substances were removed. An incision was also made in the surrounding gum tissues and bone was removed and the sockets curetted. Following these procedures she was confined in the hospital until April 9. In December 1939 another abscess which was forming was drained. As late as July 1940, apparently, the patient was receiving treatment for her condition. She instituted suit for malpractice against Marquess, the dentist who originally had treated her, and against Kennedy, his employer. The trial court granted a motion for a nonsuit and entered a judgment in favor of the defendants, and the patient appealed to the district court of appeal, fourth district, California.

At the trial a dentist practicing in Fresno was called as a witness by the plaintiff and testified that according to the standards of the practice of dentistry prevailing in Fresno, the town in which the dental services in question were performed, the defendant Marquess should have had a roentgenogram taken before extracting the tooth and should have applied iodine or some other disinfectant to the gums before inserting a hypodermic needle in them and extracting the tooth. Since, said the appellate court, where a motion for a nonsuit is granted, we must accept as true any substantial evidence tending to

support a judgment for the plaintiff, we must take the following facts as established in this case: That the standards of practice of dentistry in Fresno required that defendant Marquess have an x-ray film taken or at least recommend that an x-ray be taken of the aching tooth and jaw, and also that he sterilize the gums before inserting the hypodermic needle and pulling the tooth; that he did neither of these things and therefore did not employ the training, care and skill required of dentists of good standing practicing in the community. If this failure on the part of Marquess was the proximate cause of the infection from which the patient suffered, the nonsuit was erroneously granted. We may also accept, continued the court, as established facts that immediately after the extraction there was no infection on the roots of the tooth or in the sockets and that a serious infection set in which caused the plaintiff much suffering and expense over a period of two years.

As corroborative of the correctness of its view, the court discussed at some length *Barham* v. *Widing*, 210 Cal. 206, 291 P. 173. In that case a dentist was accused of malpractice because he failed to sterilize the hypodermic needle used in injecting an anesthetic, and to sterilize the gums before extracting a tooth.

In that case the Supreme Court of California said:

> Under the circumstances of this case there is a remote possibility that the infection developed from some cause other than the defendant's failure to sterilize the needle or the gum into which it was inserted, but the evidence is sufficient upon which to warrant the jury in finding that it was caused by his negligence in failing to follow these reasonable precautions in spite of his testimony to the contrary. The jurors were entitled to accept the solution to which these circumstances led them in preference, even, to the positive statements of the defendant and his nurse to the contrary. After the verdict of a jury has been fairly rendered, all the circumstances of the case, together with every reasonable inference which may be drawn therefrom, will be marshaled in support of the judgment. Because of the very subtleness of the origin and development of disease, less certainty is required in proof thereof. As the court says in the case of *Dimock* v. *Miller*, 202 Cal. 668, 671, 262 P. 311, 312:
>
> "If . . . it is necessary to demonstrate conclusively and beyond the possibility of a doubt that the negligence resulted in the injury, it would never be possible to recover in a case of negligence in the practice of a profession which is not an exact science."
>
> It is not necessary in the trial of civil cases that the circumstances shall establish the negligence of the defendant as the proximate cause of injury with such absolute certainty as to exclude every other conclusion. It is sufficient if there is substantial evidence upon which to reasonably support the judgment. *Ley* v. *Bishopp*, 88 Cal. App. 313, 316, 263 P. 369. . . .
>
> It was not necessary for any dentist or physician to state that the conduct of the defendant was negligent or in conflict with the usual established practice of the profession in that vicinity to administer a local anesthetic for the purpose of extracting a tooth without sterilizing the needle or the flesh into which it is inserted. The court will take judicial knowledge of the necessity to use ordinary care to procure sterilization under such circumstances.

The defendant dentist sought to distinguish the facts in the present case from the Barham case, because there the infection started from the exact spot of the injection, while here it was in the general locality but not necessarily in the exact spot of the injections. This distinction, said the court, is too tenuous to be sound. Here the infection was in the region where the needle pierced the unsterilized gums, and the reasonable inference might follow, if drawn by the jury, that a germ on the unsterile gums was carried into the tissue on the needle and caused the infection. The result of an unsterile condition is a matter of common knowledge under the cases already cited.

The defendant dentist next argued that, assuming there was a failure to conform to the standards of good practice of dentistry in Fresno, still there is nothing in the record to establish that this lack of care was the proximate cause of the infection. The same argument, said the court, was made and rejected in the Barham case just cited. A like argument was advanced by the defendant dentist in *Dimock* v. *Miller*, 202 Cal. 668, 262 P. 311, in which a dentist was accused of malpractice in failing to sterilize his needle before giving a hypodermic injection and in using impure water in the solution injected. It was held in that case that a plaintiff was not required to exclude all factors, other than those mentioned, as causes of the infection. Where the results of negligence on the part of a physician or dentist, continued the court, are peculiarly within the knowledge of expert witnesses, the testimony of those expert witnesses is a necessary element of a plaintiff's case. The danger of infection from an unsterile instrument, or a dirty field of operation, is a matter of such common knowledge that a jury is authorized to draw the reasonable inference that an infection was caused by negligence when an unsterile instrument is used, or the operative field is not properly sterilized.

As further corroborative of the correctness of its holding, the district court discussed *Roberts* v. *Parker*, 121 Cal. App. 264, 8 P. (2d) 908, in which a dentist was sued for malpractice when osteomyelitis of the jaw bone set in after an extraction had been performed and in which no roentgenogram had been taken prior to the extraction to determine the condition of the field of operation. In that case expert witnesses testified that under the standards of good practice prevailing in the community a roentgenogram should have been taken before the tooth was extracted. There was evidence introduced on behalf of the dentist tending to prove that the disease had its source other than in the extraction of a tooth. It was argued that here was nothing to show that the failure to use due care on the part of the dentist was the proximate cause of the osteomyelitis.

In disposing of this argument the court in the Roberts case said:

> Therefore, if in spite of the testimony tending to show a different origin of the disease there be testimony to sustain the opposite conclusion which has been reached by the jury, its verdict must be sustained. In other words after the verdict of the jury has been fairly rendered, all the circumstances of the case, together with any reasonable inference which may be drawn therefrom, will be marshaled in support of the judgment. . . . Measured by the foregoing rules, the circumstances of the present case are legally sufficient to sustain the jury's verdict.

A like rule, continued the court, must be invoked when the trial court grants a motion for a nonsuit.

The district court of appeal concluded that there was some substantial evidence in the record and that reasonable inferences could be drawn from that evidence, pointing to the lack of due care on the part of the defendant Marquess as being the proximate cause of the disease suffered by the plaintiff. It follows, in the opinion of the court, that questions of fact were presented for the decision by the jury and that the motion for a nonsuit was improperly granted by the trial court. Accordingly, the judgment, in effect, dismissing the suit was reversed.—*Mastro v. Kennedy, 134 P. (2d) 865 (Calif., 1943).*

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 9-11. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Congress of Physical Therapy, Chicago, Sept. 8-11. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.

Oregon State Medical Society, Portland, Sept. 4-5. Dr. Thomas D. Robertson, St. Vincent's Hospital, Portland, Secretary.

Utah State Medical Association, Salt Lake City, Aug. 27-28. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

12:289-324 (April) 1943

Protruded Intervertebral Disks. J. O. Morgan.—p. 289.
Leukemias, Hodgkin's Disease and Lymphosarcoma: Brief Discussion and Treatment. J. D. Peake.—p. 296.
Injuries of Urinary Tract. W. F. Scott.—p. 300.
Heart Disease in Pregnancy. C. R. Bennett.—p. 304.
Sequestrum of Frontal Sinuses. E. R. Nodine.—p. 307.

American Journal of Diseases of Children, Chicago

65:519-680 (April) 1943. **Partial Index**

Reactions From Diphtheria Toxoid. J. H. Landes.—p. 519.
Causes of Prematurity: III. Influence of Race and Sex on Duration of Gestation and Weight at Birth. Nina A. Anderson, Estelle W. Brown and R. A. Lyon.—p. 523.
Primary and Secondary Sexual Characteristics: Study of Their Development in Males From Birth Through Maturity, With Biometric Study of Penis and Testes. W. A. Schonfeld.—p. 535.
Symphalangism: A Familial Malformation. P. Freud and L. B. Slobody.—p. 550.
Output of Bile Pigment by Newborn Infants and by Older Infants and Children. R. J. Tat, T. J. Greenwalt and W. Dameshek.—p. 558.
Erythroblastosis Fetalis (Acute Hemolytic Anemia of the Newborn). W. Dameshek, T. J. Greenwalt and R. J. Tat.—p. 571.
Tumors of the Brain in Children and in Adolescents: A Clinical and Anatomic Survey of 92 Verified Cases. J. H. Globus, J. M. Zucker and J. M. Rubinstein.—p. 604.

American Journal of Ophthalmology, Cincinnati

26:343-442 (April) 1943

*Virus Isolated from Pemphigus-like Keratoconjunctivitis. E. Gallardo and L. H. Hardy.—p. 343.
Clinical Vascular Physiology of Eye. W. F. Duggan.—p. 354.
Psychoneurotic Factor in Ophthalmic Practice. C. A. Bahn.—p. 369.
Studies on Infectivity of Trachoma: XIII. Further Experiments on Antigenicity of Virus. L. A. Julianelle.—p. 378.
Modified Ewing Operation for Cicatricial Entropion. J. E. Smith and A. A. Siniscal.—p. 382.
An Operation for Correction of Paralytic Lateral Rectus Palsy. B. F. Payne.—p. 390.
Treatment of Herpetic and Dendritic Ulcers. F. O. Schwartz.—p. 394.
Convergence Function in Relation to Basal Metabolism. S. V. Abraham.—p. 400.
Hereditary Cataracta Cerulea: Six Related Cases. O. Wolfe and R. M. Wolfe.—p. 404.

Virus Isolated from Pemphigus-like Keratoconjunctivitis.—Gallardo and Hardy report a case of severe chronic cicatrizing keratoconjunctivitis with pannus, similar in appearance and course to ocular pemphigus. A presumptive diagnosis of ocular pemphigus was made. A virus designated as S virus, close to if not identical with vaccinia virus, was isolated from conjunctival scrapings during three different periods of exacerbation of the disease. Typical elementary bodies and cytoplasmic inclusions like those of vaccinia were found. The virus was isolated by rabbit cornea and by mouse brain inoculations, as well as by inoculation of the chorioallantois of the developing chick embryo. The close relationship to vaccinia virus was demonstrated by neutralization tests in which vaccinia immune serum neutralized the S virus, and anti S serum neutralized vaccinia virus. The relationship of the virus to the keratoconjunctivitis must remain an open question until observations in other similar cases become available.

American Journal of Public Health, New York

33:317-474 (April) 1943. **Partial Index**

Army's Contribution to Industrial Hygiene. A. J. Lanza.—p. 317.
Industrial Hygiene Program of U. S. Navy. C. S. Stephenson and O. L. Burton.—p. 319.
Industrial Hygiene Activities in Public Health Service. J. G. Townsend.—p. 324.
Unexpectd Occupational Disease Exposures During Wartime. J. J. Prendergast.—p. 330.
Impact of War on Children and Youth: Intensification of Emotional Problems. Martha W. MacDonald.—p. 336.
Trends in Laboratory Procedures in Milk Control Program of St. Louis. Jane Hershey, H. Waldrip and J. C. Willett.—p. 339.
Prognosis in White and Colored Tuberculous Children According to Initial Chest X-Ray Findings. Miriam E. Brailey.—p. 343.
Public Health Organization in Mexico. M. Quiñones.—p. 353.
Health Education in War Relocation Project. Edna A. Gerken.—p. 357.
Field Observations of Tuberculosis Patients in Rural Areas of Tennessee. R. S. Gass, Ann Dillon and W. C. Williams.—p. 362.
Accuracy of Tuberculosis Death Rates in Williamson County, Tenn. Ruth R. Puffer, H. C. Stewart, R. S. Gass and W. C. Williams.—p. 370.
Prevalence and Incidence of Tuberculosis Among Household Associates According to Age and Sex of Index Case. H. C. Stewart, R. S. Gass and W. C. Williams.—p. 379.
Simplification of Laboratory Control Procedures for Market Milk. R. S. Breed.—p 386.
Laboratory Control of Milk Under War Conditions. A. W. Fuchs.—p. 390.

American Review of Tuberculosis, New York

47:351-448 (April) 1943

Natural History of Tuberculous Tracheobronchitis. D. Salkin, A. V. Cadden and R. C. Edson.—p. 351.
Postbronchoscopic Reactions in Pulmonary Tuberculosis. D. B. Radner.—p. 370.
Pulmonary Calcification and Tuberculin Sensitivity Among Children in Williamson County, Tennessee. R. S. Gass, E. F. Harrison, Ruth R. Puffer, H. C. Stewart and W. C. Williams.—p. 379.
Intrapleural and Extrapleural Oleothorax: Report on Its Use in 36 Negro Patients. R. Hoffman and M. Kettler.—p. 388.
Tuberculous Empyema Complicating Induced Pneumothorax. J. Goorwitch.—p. 394.
Gold Therapy in Tuberculosis. A. Rest.—p. 406.
*Gastric Lavage and Sputum Cultures. J. L. Robinson and W. T. Dunn.—p. 413.
Cultures for Tubercle Bacilli from Sputum and Gastric Contents. W. Steenken Jr., R. L. Yaeger and F. H. Heise.—p. 421.
*Chorioallantoic Membrane of Chick Embryo as Medium for Testing Virulence of Tubercle Bacilli. E. W. Emmart and M. I. Smith.—p. 426.
Bronchiectasis and Dextrocardia: Observations on Etiology of Bronchiectasis. A. M. Olsen.—p. 435.

Gastric Lavage and Sputum Cultures.—Robinson and Dunn state that a thousand consecutive bacteriologic examinations of gastric lavage specimens confirm the reported efficiency of this procedure. They recommend the use of a small caliber, soft rubber tube to collect the material and of small amounts of water for lavage. Inoculation of culture mediums and/or guinea pigs with as much as possible of the material obtained is necessary for best results. Microscopic examination of the stained sediment is not adequate. Examination by culture and/or animals of simultaneously obtained sputum and gastric lavage material from persons whose concentrated sputum has been previously found microscopically negative will yield more positive results than will examination of either material alone. A gastric lavage examination should be made of all persons who have a negative sputum or no expectoration and are suspected of having pulmonary tuberculosis. It is also indicated for patients under treatment for pulmonary tuberculosis when the sputum becomes scanty or inconstant in amount or when they cease to expectorate.

Chorioallantoic Membrane of Chick Embryo for Testing Tubercle Bacilli.—In order to check the relative virulence of the two substrains H37-Rv and H37-Ra, suspensions were implanted by Emmart and Smith on the chorioallantoic membrane of the nine day chick embryo and also inoculated into guinea pigs. Within six days after implantation 96 per cent tubercle formation was present in the membranes implanted with the strain H37-Rv, while only 18 per cent tubercle formation was present in those implanted with the avirulent strain H37-Ra. Corresponding differences in invasiveness of the two substrains were found in guinea pigs. Only 1 guinea pig inoculated with H37-Ra died within one hundred and nine days,

while 100 per cent of those inoculated with H37-Rv died within the same period. Thus the chorioallantoic membrane of the chick embryo can be successfully used to determine differences in virulence between closely related substrains of tubercle bacilli.

Annals of Otol., Rhin. and Laryngology, St. Louis

52:5-278 (March) 1943. **Partial Index**

Relation of Ciliary Insufficiency to Death from Asthma and Other Respiratory Diseases. A. C. Hilding.—p. 5.
Otoscopic Picture in Deafness. W. Mueller.—p. 20.
Audiometric and Word Test Findings: Preliminary Report. Ruth P. Guilder.—p. 25.
Treatment of Ménière's Syndrome with Magnesium Salts. A. Schick. —p. 45.
Quinine in Relation to Nerve Deafnenss. S. B. Forbes.—p. 109.
Sulfanilamide Implantation in Mastoid Wounds. R. H. Marcotte.—p. 126.
Cancer of the Nasopharynx. C. L. Martin.—p. 146.
Clinical Experience with Sulfonamides in Otolaryngology. G. S. Livingston.—p. 171.
Primary Thrombosis of Common Carotid Artery with Recovery. M. F. Jones.—p. 184.
Rhinolith. H. B. Stauffer.—p. 190.
Carcinoma of Middle Ear and Mastoid. L. T. Buckman.—p. 194.

Archives of Dermatology and Syphilology, Chicago

47:467-612 (April) 1943

*Erythema Infectiosum: Report of Extensive Epidemic. L. Chargin, N. Sobel and H. Goldstein.—p. 467.
Injections of Gold Sodium Thiosulfate Plus Ultraviolet Irradiation: Effects of Concurrent Intradermal or Intramuscular Injections of Gold Sodium Thiosulfate and Ultraviolet Irradiation on Experimental Animals. O. E. L. Schmidt, I. C. Evans and W. B. Chamberlin Jr. —p. 478.
Hereditary Dystrophy of Hair and Nails: Report of Cases. J. P. Scully and C. S. Livingood.—p. 486.
Time Factor in Irradiation. G. M. MacKee, A. Mutscheller and A. C. Cipollaro.—p. 490.
Histiocytoma Cutis: A Variant of Xanthoma: Histologic and Clinical Studies of Twenty-Seven Lesions in 23 Cases. H. L. Arnold Jr. and I. L. Tilden.—p. 498.
Histochemistry of Pemphigus Lesions With Special Reference to Bullous Formation: Cl. R. C. MacCardle, J. P. Baumberger and W. C. Herold.—p. 517.
Tinea Versicolor Involving Scalp. O. G. Costa and M. A. Junqueira. —p. 546.
*Rapid Treatment of Early Syphilis: Report of 280 Treatment Courses with Mapharsen Alone and 549 Treatment Courses with Mapharsen Combined with Fever. E. W. Thomas and Gertrude Wexler.—p. 553.
Evaluation of Fungicidal Agent for Fungous Disease of Feet: Controlled Hospital Study. L. Goldman, A. B. Henningsen, N. P. Ringelman, H. H. Fox and J. Hesselbrock.—p. 569.
"Red Moss" Dermatitis: Contact with Sponges Affecting Oystermen. E. F. Corson and A. G. Pratt.—p. 574.
Method to Enhance Value of Biopsies in Dermatologic Diagnosis. A. E. Rhoden.—p. 580.

Epidemic of Erythema Infectiosum.—Chargin and his associates report an outbreak of erythema infectiosum in a New York orphanage which housed 137 children, 80 of which were attacked. There were observed eighty primary attacks and ninety relapses, a total of one hundred and seventy attacks. The relapses numbered from one to six. The most severe attacks and the greatest number of relapses were among the girls. Next in order of frequency and severity were the group of older boys. The mildest attacks occurred among the younger boys; no relapses were observed in this group. In 64.7 per cent the eruption was limited to the face, in 2.3 per cent to the body and in 33 per cent to the face and the body. Infants and children between the ages of 1 and 4 years were relatively immune. Seventy of the eighty primary attacks occurred within the first thirteen days following the outbreak. The relapses appeared in cycles. Laboratory and epidemiologic studies failed to throw light on the causation. The disease is apparently not transmitted by carriers. The disease is not reportable but should be so made as to make possible etiologic and epidemiologic studies. The incubation period appears to have been from one to twelve days.

Rapid Treatment of Early Syphilis.—Thomas and Wexler report the results of treating 782 patients by the rapid method. Mapharsen 0.06 Gm. was given morning and evening for ten days. Later the treatment period was shortened to six days in order to avoid an occasional "ninth day erythema." The patients were now given 0.1 Gm. morning and evening for six days. Thus the dose per day was increased from 0.12 Gm. to 0.2 Gm., but the total amount for the course remained unchanged at 1.2 Gm. Under this plan no serious toxic reactions were noted until the one hundred and eleventh patient, a woman, died of hemorrhagic encephalitis. Efforts were made to find the dose that would be neither great enough to endanger the abnormally sensitive nor small enough to penalize the average patient by unduly protracting his disease. Relapses were more frequent among patients who received less than 0.9 Gm. of mapharsen. Attempt was made to enhance the therapy by combining fever treatment with it. This apparently did nothing to prevent rare cerebral reactions but permitted the authors to obtain better therapeutic results from smaller doses. The results of treating early syphilis either with a total dosage of 1.0 Gm. or more of mapharsen or with a combination of fever and less than 0.9 Gm. of mapharsen compare favorably with the results of prolonged continuous routine treatment.

Arkansas Medical Society Journal, Fort Smith

39:229-256 (April) 1943

Alcohol: Public Health Problem. A. C. Kolb.—p. 229.

California and Western Medicine, San Francisco

58:155-260 (April) 1943

Hospitals and Medical Practice: How Physicians and Hospitals May Render Best Service During Duration. W. R. Molony Sr.—p. 220.
War Surgery. W. H. Cole.—p. 223.
Central Nervous System Syphilis: Its Treatment at Stockton State Hospital. F. S. Marnell.—p. 226.
Practical Ethics. L. J. Regan.—p. 227.

Canadian Medical Association Journal, Montreal

48:291-382 (April) 1943

Treatment of Phosphorus Burns, with Note on Acute Phosphorus Poisoning. I. M. Rabinowitch.—p. 291.
Essential Features Concerning Proper Nutrition of Infant and Child. A. Brown and Elizabeth Chant Robertson.—p. 297.
Thermal Burns. S. D. Gordon and R. A. Gordon.—p. 302.
Bromide Intoxication. H. Detweiler.—p. 309.
Technic in Labor. G. M. White—p. 312.
Cardiac Pain. G. F. Strong.—p. 318.
Teaching Compatibility Tests for Blood Donors. N. M. Guiou.—p. 322.
*Pneumonia Complicating Mild Respiratory Infections. R. P. Becker. —p. 324.
*Primary Atypical Pneumonia of Unknown Etiology. J. F. Meakins. —p. 333.
Seasonal Variations in Water Content of Respiratory Tract of Man and Other Mammals. Mary E. T. Stevens, Alice K. Ronan and E. M. Boyd.—p. 337.
Indications for Common Duct Exploration. D. Macdonald.—p. 341.

Pneumonia Complicating Mild Respiratory Infections.—Becker emphasizes that lobular atelectasis occurring in the course of acute respiratory infection is much more common than is generally supposed. Radiographically it simulates bronchopneumonia. Some degree of infection is frequently present distal to bronchial obstruction. The clinical course, usually benign and brief, is apparently determined by such factors as size, location and number of bronchi involved and the degree of blockage together with the dosage and virulence of infection distal to the bronchial occlusion. Localized crepitations, tubular breathing and dulness are often absent. Even slight differences in breath sounds and resonance in a patient suffering from a respiratory infection warrant a suspicion of a pulmonary complication. In most instances x-ray study alone will afford adequate information. Considerable variation exists in the onset and clinical course of such respiratory episodes, ranging in extent from a picture simulating severe "flu" or grip or a heavy chest "cold" to an ambulant status presenting only extremely mild symptoms. No studies have established a clear-cut virus causation for this class of bronchopneumonia. Until satisfactory laboratory studies to the contrary are completed, such pulmonary infections are best explained on a basis of partial bronchial obstruction with distal infection.

Primary Atypical Pneumonia of Unknown Cause.—Meakins says that between June and November 1942 approximately 150 cases with the eventual diagnosis of lobar pneumonia, bronchopneumonia and pneumonitis were admitted to his hospital. He thinks that the great majority of these "pneumonias" were what could be termed "primary atypical pneumonia, etiology unknown." He presents an analysis of the data on 100 cases which suggest that this disease entity might easily be

mistaken for severe coryza, "grip" or bronchitis. X-ray examination of the lungs always showed infiltrative changes and 96 per cent of the cases gave physical signs. Cough was the main complaint. Usually a normal leukocyte count was found. The course of the disease was mild. No dangerously ill patients have been seen and there have been no deaths.

Cancer Research, Baltimore

3:217-280 (April) 1943. **Partial Index**

Factors That Alter Fluorescence of Certain Carcinogens. J. A. Miller and C. A. Baumann.—p. 223.
Liver Tumors Following Cirrhosis Caused by Selenium in Rats. A. A. Nelson, O. G. Fitzhugh and H. O. Calvery.—p. 230.
Quantitative Determination of Growth of Transplantable Mouse Adenocarcinoma. J. G. Hoffman, H. L. Goltz, M. C. Reinhard and S. G. Warner.—p. 237.
Cerebral Tumor in Dog Resembling Human Medulloblastoma. K. T. Neubuerger and C. L. Davis.—p. 243.
Studies on Morphology of Peripheral Blood of Rats: II. Rats Injected Subcutaneously with Carcinogenic Hydrocarbons. W. F. Dunning and C. Reich.—p. 258.

Florida Medical Association Journal, Jacksonville

29:393-452 (April) 1943

Atelectasis: Postoperative Complication in Renal and Ureteral Surgery. R. B. McIver and D. R. Seabaugh.—p. 407.
Wounds of Abdomen. J. W. Snyder.—p. 412.
Use of Vitamin K in Obstetrics. H. G. Nix.—p. 418.
Factors Influencing Formation of Blebs After Corneoscleral Trephining. H. C. Ingram.—p. 420.
Amebic Dysentery. E. B. Campbell.—p. 422.
Dextrocardia. H. E. Palmer.—p. 425.

Indiana State Medical Assn. Journal, Indianapolis

36:181-234 (April) 1943

Factors in Management of Cancer of Uterine Cervix. J. A. Campbell.—p. 181.
Present Day Status of Combined Blood Plasma Bank, with Reference to Use of Concentrated Red Cell Suspensions: Operation and Use in Medium Sized Hospital. L. L. Blum.—p. 187.
Production of Experimental Shock in Dogs by Use of Venous Tourniquets. C. C. Scott and E. B. Robbins.—p. 194.
Rights of Industrial Practitioner in Industrial Medical Program. K. R. Ruddell.—p. 200.
Legal Responsibilities of Industrial Physician. A. Stump.—p. 201.
Fick's Syndrome. M. Sandorf.—p. 205.

Journal of Clin. Endocrinology, Springfield, Ill.

3:195-256 (April) 1943

Diurnal Rhythm. Excretion of Urinary Ketosteroids by Young Men. G. Pincus.—p. 195.
Rapid Clinical Determination of Urinary 17-Ketosteroids. W. A. Robbie and R. B. Gibson.—p. 200.
Purification of Equine Gonadotropin and Its Effect on Appearance of Antigonadotropic Substances in Human Sera. J. H. Leathem and A. R. Abarbanel.—p. 206.
Case of Cushing's Syndrome with Adrenal Cortical Hyperplasia, without Pituitary Basophilic Adenoma or Hyperplasia. K. E. Paschkis, P. A. Herbut, A. E. Rakoff and A. Cantarow.—p. 212.
Contribution to Treatment of Essential Pruritus and Kraurosis Vulvae. E. Klaften.—p. 218.
Effect of Estradiol and Diethylstilbestrol on Atrophic Human Buccal Mucosa with Preliminary Report on Use of Estrogens in Management of Senile Gingivitis. M. J. Richman and A. R. Abarbanel.—p. 224.
Nutritional Deficiency in Etiology of Menorrhagia, Metrorrhagia, Cystic Mastitis and Premenstrual Tension; Treatment with Vitamin B Complex. M. S. Biskind.—p. 227.
Effect of Androgens on Libido in Women. U. J. Salmon and S. H. Geist.—p. 235.
Personality Changes in Endocrine Disorders: with Note on "Symptomatic Hypoglycemia." B. N. Tager and E. K. Shelton.—p. 239.
*Furunculosis—Etiology and Treatment. B. Barnes.—p. 243.

Furunculosis.—Barnes reports observation on furunculosis in 16 college students between the ages of 17 and 25. No correlation was apparent between the hemoglobin values and the development of boils; there was no evidence of malnutrition and no local skin conditions contributing to the development of furunculosis. The basal metabolic rate or basal temperature was below normal in each case. Thyroid 1 grain (0.06 Gm.) a day was given and further boils did not develop during the period of this therapy. In myxedema the blood flow per minute and the skin temperature are reduced but with thyroid medication are restored to normal. Since the healing process is accompanied by an increase in circulation, it is not surprising that thyroid therapy would aid in skin infections of persons with poor peripheral circulation.

Journal of Experimental Medicine, New York

77:297-396 (April) 1943. **Partial Index**

Studies on Experimental Hypertension: XX. Bioassay of Renin. H. Goldblatt, Y. J. Katz, H. A. Lewis and Evelyn Richardson.—p. 309.
Inactivation of Virus of Lymphocytic Choriomeningitis by Soaps. C. C. Stock and T. Francis Jr.—p. 323.
Course of Experimental Infection of Chick Embryo with Virus of Equine Encephalomyelitis. F. B. Bang.—p. 337.
Isolation of Chromatin Threads From Resting Nucleus of Leukemic Cells. A. Claude and J. S. Potter.—p. 345.
Morphologic Structure of Rickettsiae. H. Plotz, J. E. Smadel, T. F. Anderson and L. A. Chambers.—p. 355.
Induced Resistance of Central Nervous System to Experimental Infection with Equine Encephalomyelitis Virus: II. Serotherapy in Western Virus Infection. P. K. Olitsky, R. W. Schlesinger and I. M. Morgan.—p. 359.
Hemoglobin and Plasma Protein: Simultaneous Production During Continued Bleeding as Influenced by Amino Acids, Plasma Hemoglobin and Digests of Serum, Hemoglobin and Casein. Frieda S. Robscheit-Robbins, L. L. Miller and G. H. Whipple.—p. 375.

Journal of Nervous and Mental Disease, New York

97:389-508 (April) 1943

Case of Cerebellar Atrophy. M. Ellermann.—p. 389.
Pathology Among Institutionalized Psychotics. T. K. Rathmell and M. M. Lieber.—p. 397.
Significance of Body Image for Personality Assay: With Special Application in Allergy. E. A. Brown and P. L. Goitein.—p. 401.
Influence of Indian and Negro Blood on Manic Depressive Psychosis. S. Fischer.—p. 409.
Developmental Defects in Schizophrenics and Schizoids. L. Kerschbaumer.—p. 421.
Cryptorchism and Cremasteric Reflexes. L. Hess.—p. 423.
Traumatic Neurosis of World War I Twenty-Three Years After: Psychiatric and Rorschach Investigations. J. S. Miller and Mollie Gair.—p. 436.
Observations of the English in Wartime. I. Matte.—p. 447.

Journal of Pediatrics, St. Louis

22:387-512 (April) 1943

Observations on Hemolysins in Acute Hemolytic Anemia: Case Report. H. G. Poncher, H. F. Weir and I. Davidsohn.—p. 387.
*Prevention of Rickets with Single Massive Doses of Vitamin D. I. J. Wolf.—p. 396.
Susceptibility of Shigella Paradysenteriae to Sodium Sulfathiazole and Sulfaguanidine in Vitro: With Some Information Regarding Eberthella Typhosa, Salmonella Paratyphosa, Escherichia Coli, Salmonella Morgani and Proteus. M. L. Cooper and Helen M. Keller.—p. 418.
Histaminase in Treatment of Allergy in Children. M. M. Peshkin, H. G. Rapaport, W. Messer, I. Feuer, Adele Sicular and A. Berger.—p. 426.
*Fatal Agranulocytosis Following Sulfathiazole Therapy: Report of Infant with Toxic Dermatosis. K. Kato, Mary Stults Sherman and P. R. Cannon.—p. 432.
Mixed Immunization in Infancy and Childhood. J. H. Lapin.—p. 439.
Whooping Cough Vaccines. J. H. Lapin.—p. 452.
Treatment of Paroxysmal Auricular Tachycardia in Infancy and Childhood: Report of Case. W. D. Alsever.—p. 459.
Familial Epidemiology of Rheumatic Fever: Genetic and Epidemiologic Studies: I. Genetic Studies. May G. Wilson, M. D. Schweitzer and Rose Lubschez.—p. 468.

Vitamin D Therapy in Prevention of Rickets.—Wolf gave 600,000 U. S. P. units of an electrically activated preparation of ergosterol divided in two oral doses in precooked cereal and milk to 75 infants between the third to fifth month of life. Massive doses of vitamin D were well tolerated. No toxic manifestations were observed. No diminution in the incidence of respiratory infections was noted. There is no danger in administering a single massive dose of vitamin D to young or premature infants. The danger lies in repeating these large doses over a period of time so that several million units of vitamin D are given. Large doses may be toxic if repeated daily. Two plans are outlined. One is to protect the infant until 2 or 3 months of age by means of daily prophylactic doses of 1,000 units of vitamin D and then to administer a single dose of 600,000 units. The latter dose may be repeated from four to six months later. The other plan is to give an infant at 1 and 2 months of age respectively 50,000 units of vitamin D in formula and then at about 3 months of age to administer a single dose of 600,000 units in precooked cereal. This single dose may be repeated from four to six months later. There is experimental evidence that vitamin D when given in single massive doses is stored in the blood plasma and the tissues for weeks or months. This evidence is borne out by clinical observations. The oral single massive dose prophylaxis of rickets is to be preferred to the parenteral method. Only in severe

intestinal disturbances or for young premature infants whose absorption may be poor is it necessary to use the parenteral method. The single massive dose of vitamin D is effective, safe and time saving.

Fatal Agranulocytosis Following Sulfathiazole Therapy.—Kato and his associates report a case of acute and fatal agranulocytosis with toxic dermal lesions produced by therapeutic doses of sulfathiazole in an infant 8 weeks old. Despite the fact that absolute proof of the sulfonamide being the sole cause of agranulocytosis is lacking, the circumstantial evidence in the case strongly suggests that both intoxication by and sensitization to this drug played significant roles in the production of the toxicodermatosis as well as of the agranulocytosis which resulted in the death of the patient.

Medical Annals of District of Columbia, Washington

12:131-170 (April) 1943

Evaluation of Sympathectomy. O. H. Fulcher.—p. 131.
Use and Therapeutic Value of Intubation and Decompression with Miller-Abbott Double Lumen Tube. F. A. J. Geier.—p. 138.
Meningitis Caused by Bacillus Prodigiosus: Report of Case. J. L. Thompson.—p. 145.
Cranial and Abdominal Migraine: Report of Case. R. H. Groh and J. R. Veal.—p. 147.

Military Surgeon, Washington, D. C.

92:353-472 (April) 1943

*Orthostatic Albuminuria: Importance of Its Recognition by Medical Examining Boards. H. H. Young, J. S. Haines and C. L. Prince.—p. 353.
Forward March of Physical Medicine. W. S. Bainbridge.—p. 365.
Therapeutic Considerations for Army Psychiatrists. W. C. Porter, J. G. Novak and P. V. Lemkau.—p. 372.
Management of Acute Malaria. J. E. Dushane and L. A. Passalacqua.—p. 379.
Relationship of Eye to Antiaircraft Gunnery. E. E. Grossmann.—p. 383.
*Diagnosis and Treatment of Infectious (Gas) Gangrene. B. Jablons and L. H. Krebs.—p. 394.
Intravenous Injection of Casein Digests (Amino Acids) in Maintenance of Nutrition. Consideration of Medicomilitary Aspects. A. Brunschwig, D. E. Clark and Nancy Corbin.—p. 413.
Survey of Allergy in Station Hospital. P. Blank.—p. 419.
X-Ray and Clinical Findings in Routine Examination of Chests of 10,000 Inductees. G. C. Brown.—p. 423.
Black Widow Spider Bites in Adult Male. B. L. Halter and W. C. Kuzell.—p. 427.
Dentigerous Cyst: Case. A. D. Faier.—p. 433.
Construction of Simple Saliva Ejector Apparatus in Field. S. S. Libbin.—p. 435.
Symptomless Calculous Pyonephrosis. B. E. Marks.—p. 436.
Burns Treated by Cod Liver Oil Ointment—Paper Tissue Dressing: Peacetime Dressing Brought to War. G. B. Callahan.—p. 439.
Instrument for Introducing Sulfonamide Crystals into Wounds. H. J. Walder.—p. 442.
Flying Ambulance. A. W. Williams.—p. 443.

Orthostatic Albuminuria.—Young and his associates show that in each of 4 patients rejected by the medical examining boards because of albumin in the urine the albuminuria was orthostatic in character. The examining boards now accepted these men. The diagnostic value of placing the patient in an exaggerated lordotic position is emphasized. Sixty-seven cases diagnosed as orthostatic albuminuria were studied from the records of the Johns Hopkins Hospital. Three of these were shown to be cases of nephritis. In the remaining 64 no evidence of nephritis developed, and repeated examinations in some showed the urine to be free from albumin at various periods after admission. Orthostatic albuminuria is a harmless condition which generally disappears early in adult life. The following criteria should be met: (1) no past history of renal disease; (2) normal blood chemistry, nonprotein nitrogen, blood urea, total protein and albumin-globulin ratio; (3) normal kidney function (phenolsulfonphthalein, urea clearance, and dilution and concentration tests); (4) no leukocytes, erythrocytes or casts in the urine, except intermittently and in small numbers; (5) no elevation of the blood pressure; (6) negative plain x-ray films and intravenous urograms; (7) absence of albumin in the urine secreted and voided when in the recumbent position. Young men rejected by medical examining boards because of albuminuria could probably be shown fit for service with the use of more comprehensive tests.

Infectious Gas Gangrene.—Jablons and Krebs stress that infectious gas gangrene, particularly in war wounds, is a multiple infection. The micro-organisms concerned are members of the anaerobic group, either in pure culture or in association with aerobes. The authors list 21 pathogenic anaerobic organisms which have been isolated from infected wounds, 11 aerobes which have been found in association with anaerobes in clinical cases of infectious gangrene and 9 toxigenic anaerobic organisms which can give rise to a progressive toxic necrosis of tissue with or without general fatal intoxication. The best treatment, in addition to surgery, is a combination of antitoxin and chemotherapy with the sulfonamide group of drugs. Prophylactic serum for infectious (gas) gangrene to be of value must contain antibodies against the three most commonly occurring organisms. The curative treatment of infectious (gas) gangrene depends on the identification of the organisms present, since the serum must contain antibodies against these causative agents. The results of treatment with monovalent and polyvalent serum in the first world war and in civil practice since has shown that the mortality rate of 44.60 per cent in cases of infectious (gas) gangrene can be reduced to 9.12 per cent by the use of anti Welch-septicum-oedematiens serum. Surgical excision is of value as a prophylactic measure. It is not curative in advanced cases. Infiltration of the tissues by the anaerobes in advanced cases makes multiple incisions of little value. Chemotherapy with the sulfonamide drugs or zinc peroxide has some value as a prophylactic measure in delaying development of the infection. Its efficacy in combating advanced anaerobic infections has not been proved.

Minnesota Medicine, St. Paul

26:321-400 (April) 1943

Atypical Pneumonia. W. W. Spink.—p. 337.
Neurologic Complications Associated with Spinal Anesthesia. E. M. Hammes.—p. 339.
Spinal Anesthesia—Important Principles. R. T. Knight.—p. 346.
Newer Trends in Intravenous Anesthesia. J. S. Lundy and E. B. Tuohy.—p. 349.
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The Doctor of Medicine and His Responsibility. A. W. Adson.—p. 352.
Obstetric Hemorrhage. A. B. Hunt.—p. 355.
Postpartum Hemorrhages and Associated Problems. H. D. McGee.—p. 363.
Delayed Speech From Standpoint of Psychologist. Grace Arthur.—p. 369.
Vitamin A in Treatment of Hypertension. J. S. Blumenthal and M. Wetherby.—p. 370.

Missouri State Medical Assn. Journal, St. Louis

40:95-132 (April) 1943

Factors of Recognition and Treatment of Early Degenerative Heart Disease. W. B. Kountz.—p. 95.
Mapharsen in Syphilis Complicated by Pregnancy. S. D. Soule and A. R. Bortnick.—p. 97.
Fitness, Food Allergy and Predisposition to Common Cold. W. B. Brown and A. P. Locke.—p. 99.

New Jersey Medical Society Journal, Trenton

40:121-160 (April) 1943

Care of the Burned Patient. R. A. Schaaf.—p. 128.
Food Infection by Salmonella Paratyphi. C. V. Craster and A. H. Haskin.—p. 134.
Dermatitis Venenata Caused by Phenol Camphor Mixtures. E. M. Satulsky and W. Halpern.—p. 137.
Report of 9 Cases of Subacute Bacterial Endocarditis. H. Halprin.—p. 140.
Postpartum Hemorrhage: Maternal Welfare Article Number Eighty. A. W. Bingham.—p. 148.

Radiology, Syracuse, N. Y.

40:221-326 (March) 1943

Excretory Urography as Test of Urinary Tract Function: Carman Lecture. E. P. Pendergrass.—p. 223.
Development of Bone in Relation to Formation of Neoplasms. K. O. Haldeman.—p. 247.
Correlation of Roentgenogram and Pathologic Changes in Ossifying and Chondrifying Primary Osteogenic Neoplasms. J. V. Luck.—p. 253.
Roentgenologic Pattern of Small Intestine in Infants and Children. H. Zwerling and W. E. Nelson.—p. 277.
Quality, Area and Distance: Relationship for D_5, D_{10} and D_{25}: I. M. C. Reinhard and H. L. Goltz.—p. 283.
Id.: II. M. C. Reinhard and H. L. Goltz.—p. 293.
Use of Small X-Ray Films in Tuberculosis Control. H. E. Hilleboe.—p. 297.

Surgery, St. Louis

13:333-494 (March) 1943

*Acute Craniocerebral Trauma: Surgical and Pathologic Considerations Based on 151 Consecutive Autopsies. E. S. Gurdjian, J. E. Webster and H. Arnkoff.—p. 333.
Epidermoid Tumor of Spinal Cord: Case; Review of Literature of Spinal Epidermoids and Dermoids. R. L. Craig.—p. 354.
*Paraphysial Cysts of Third Ventricle: Diagnosis and Surgical Management. L. M. Weinberger and B. Boshes.—p. 368.
*Use of Detergents in Cleansing and Local Treatment of Burns. N. Rosenberg.—p. 385.
Use of Tannic Acid Jelly in Experimental Burns. D. D. Matson.—p. 394.
Effects of Application of Tourniquet on General Response to Gross Trauma to Extremity. G. W. Duncan and A. Blalock.—p. 401.
Gradual Occlusion of Mesenteric Vessels: Experimental Study. H. Laufman.—p. 406.
*Injection of Varicose Veins: Importance and Technic of Injecting Elevated Extremity. C. J. Bellis and Otto L. Churney.—p. 411.
"Cylindroma" (Adenocarcinoma, Cylindroma Type): Report of 2 Cases with Metastasis. M. B. Dockerty and C. W. Mayo.—p. 416.
Problems in Surgical Management of Diabetic Gangrene. C. W. McLaughlin Jr.—p. 423.
Studies in Bacteriophage: VII. Behavior of Staphylococcus Bacteriophage in Human Serum and Blood. Helen Zaytzeff Jern and F. L. Meleney.—p. 434.
Infarction of Gallbladder. F. Christopher, E. L. Benjamin and F. K. Gowdy.—p. 444.
Failure to Recover Sulfonamides from Gallbladder Bile in Dogs with Cystic Duct Obstruction. D. Lynn, G. S. Bergh and W. W. Spink.—p. 447.
Serum Sickness Simulating Acute Abdominal Disorders. V. J. Derbes and F. E. Bruno.—p. 450.

Acute Craniocerebral Trauma.—The material presented by Gurdjian and his associates comprises the results of observations made on postmortem examinations of 151 patients who died following cranial trauma. They show that in practically every instance of fatal head injury there is a combination of pathologic processes. For example, although the chief lesion may be an epidural hemorrhage, petechial hemorrhages and cerebral bruises frequently coexist. There is great variation in the extent and severity of brain lesions in the fatal cases. Among some, few pathologic lesions were noted to explain the cause of death. However, gross lesions were found in every case. A massive intracranial hemorrhage due to trauma is usually on the surface of the brain and may be amenable to surgical treatment. Large intracerebral clots are rare. In epidural hemorrhage, exploration about a fracture line seems justifiable. In subdural hemorrhage a fracture line is of little value in localization, often being opposite to the side of the subdural hemorrhage.

Paraphysial Cysts of Third Ventricle.—Weinberger and Boshes point out that the small, benign, encapsulated cystic tumors occupying the third ventricle of the brain formerly eluded the neurologist. Cerebral pneumography and modern refinements of neurosurgical technic have made possible the diagnosis and the removal of these tumors. The authors report a successful removal of a paraphysial cyst, which brings the total number of reported surgical recoveries to 17. Paraphysial cysts are now recognized as arising from the paraphysial body, an ancient gland situated in the midline of the rostral portion of the roof of the third ventricle. A syndrome diagnostic of these tumors is lacking, but the occurrence of violent headache influenced by posture is regarded by some as significant. Operation for a paraphysial cyst should be performed in one stage. Ample working room is obtained within the dilated lateral ventricle. The structures are seen clearly with the aid of illuminated retractors, which may be easily introduced within the ventricle. The foramen of Monro may be found by following the choroid plexus forward until it is seen to disappear. The cyst, if large, presents itself as a greenish or bluish mass in a dilated foramen. If small, it may not be visible and the foramen may appear as a small slit. By tugging gently on the choroid plexus, one can bring the cyst wall into view in the aperture of the foramen. In the reported case it was possible thus to tease the cyst through the foramen. Some operators first evacuate the thick colloidal contents of the cyst by aspiration and then deliver the capsule through the foramen. Others enlarge the foramen by slitting its margin. The slit can be made safely only in the anterior rim of the foramen. The occurrence of cerebral swelling, as a consequence of operative manipulations, may require drainage of the ventricle for a few days with a Penrose drain or an indwelling cannula. If a patient survives the operative procedure and the immediate postoperative course, a complete recovery is to be expected. From this point of view paraphysial cysts are extremely favorable tumors.

Detergents in Cleansing of Burns.—According to Rosenberg, most workers are of the opinion that vigorous cleansing methods have no place in the preliminary treatment of burns because (*a*) anesthesia is required, (*b*) shock is thereby increased and (*c*) injury to remaining healthy tissue results. In many burns the tanning or coagulation method of local treatment seems to possess advantages, but infection arising from beneath the eschar speaks for the inadequacy of preliminary cleansing procedures. Certain of the synthetic detergents, employed in one of several combinations, act as cleansing agents in the local treatment of burns. Their unique properties which make them superior to other cleansing agents are (*a*) their ability to penetrate and "solubilize" substances such as greases, oils and fats as well as particulate matter, (*b*) their lack of irritating or tissue damaging properties, (*c*) their antiseptic nature and (*d*) the fact that after all grease, including the normal skin oils, is removed the subsequent take of dye or tanning agent is rendered easier and a proper eschar more readily formed. In clinical tests with a number of detergent mixtures, performed both on controls with normal, intact skin and on 25 patients with relatively mild second degree burns, the properties listed were substantiated. More than three fourths of the burns when first observed in the emergency service of a metropolitan hospital were covered with grease, oil, fats or ointments. Burns covered with grease and oil, the result of military engagements, represent a problem in which the application of these new cleansing agents may be of specific benefit.

Injection of Varicose Veins.—The method described by Bellis and Churney has been employed successfully in a large series of cases in the surgical service of the O'Reilly General Hospital, U. S. Army, Springfield, Mo., and in the surgical outpatient clinic of the University of Minnesota Hospital, Minneapolis. With the patient sitting on the table and the lower extremities on a nearby stool or simply flexed over the side, one of the most distal varicose veins, one usually around the ankle, is selected. A No. 25 gage needle to which is attached a syringe containing 3 to 5 cc. of a sclerosing solution is inserted into the vein at the most convenient distal point. With the syringe held firmly in place, but without injecting any of the sclerosant, one brings the patient's lower extremities carefully onto the table; the patient lies horizontally, and the affected extremity is elevated by an assistant to at least 45 degrees. As much as possible of the blood contained in the veins is permitted to drain into the deep system, and when the extremity appears pale the sclerosant is injected into the ankle vein and the needle removed. No bleeding occurs from the needle puncture, since the point of injection is elevated above the level of venous pressure. A small dry dressing is placed over the puncture site and an elastic bandage wrapped from the ankle to the middle of the thigh. The extremity is then placed on several pillows and the patient allowed to remain in that position for twenty minutes, following which he is allowed to be ambulatory. Any of the popular sclerosants may be employed. The authors used 5 per cent sodium psylliate. With this simple technic a single injection was usually sufficient, while a few have been given two injections.

Yale Journal of Biology and Medicine, New Haven

15:531-656 (March) 1943. **Partial Index**

Early Measles Epidemics in America. E. Caulfield.—p. 531.
Serologic Studies of Transplantable Mouse Tumor 15091a. H. Bunting.—p. 557.
Ontogenetic Correspondences in Supine and Prone Postures of Human Infant. A. Gesell and Louise B. Ames.—p. 565.
Studies in Syphilis: II. Methods of Analysis of Yale Autopsy Protocols, Including a Code for Punched Card Study of Syphilis. B. Black-Schaffer and P. D. Rosahn.—p. 575.
Atypical Friedreich's Ataxia: Report of 4 Cases, with Encephalography in 1. J. P. Murphy.—p. 603.
Comparative Study of Intradermal and Subcutaneous Methods for Typhoid Vaccination. A. Leibovitz.—p. 609.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

27:146-192 (April) 1943

*Some Anomalous Forms of Amaurotic Idiocy and Their Bearing on Relationship of Various Types. R. Wyburn-Mason.—p. 145.
Color in Protective Night Light. C. E. Ferree and G. Rand.—p. 173.

27:193-240 (May) 1943

*Some Anomalous Forms of Amaurotic Idiocy and Their Bearing on Relationship of Various Types. R. Wyburn-Mason.—p. 193.
Marginal Hemorrhage on Disk; Partial Cross Tearing of Optic Nerve; Clinical and Histologic Findings. A. Loewenstein.—p. 208.
Orthoptic Treatment of Anomalous Projection. Diana S. Mann.—p. 215.
Contact Lens in Cases of Neuroparalytic Keratitis. M. Klein.—p. 221.
Orbital Emphysema Simulating Cellulitis. C. L. C. O'Malley.—p. 222.
Removal of Small Magnetic Foreign Body from Eye Eighteen Months After Date of Injury. H. Neame.—p. 226.
Multiple Intraocular Foreign Bodies: Case. R. A. D. Crawford.—p. 227.

Anomalous Forms of Amaurotic Idiocy.—Wyburn-Mason presents a number of typical and atypical cases of amaurotic idiocy and furnishes evidence that two types of the disease exist: 1. An infantile type, mainly confined to Jews, which is usually, but not always, rapidly fatal and almost always begins before the third year. Occasionally only optic atrophy occurs instead of the usual macular cherry-red spot. It is probably related to Niemann-Pick's disease. 2. A juvenile type, with onset chiefly at about 6 to 8 years of age, but sometimes as early as the second year or as late as the twenties. It occurs chiefly in non-Jews, has a slower course and also occasionally shows optic atrophy instead of the pigmentary macular changes, the final retinal picture resembling retinitis pigmentosa. It is unrelated to the infantile type genetically or histochemically and its relationship to macular heredodegeneration is doubtful. Often only cerebral or retinal changes are present in older cases.

British Journal of Radiology, London

16:99-128 (April) 1943

Radiologic Diagnosis of Craniolacunia. J. B. Hartley and C. W. F. Burnett.—p. 99.
Estimation of Energy Absorption During Teleradium Treatment. F. Bush.—p. 109.
Subcutaneous X-Ray Therapy: Preliminary Communication. T. A. Watson.—p. 113.
Investigation of Absorption of Gamma Rays in Surface Therapy Applicators. H. F. Cook.—p. 115.
Case of Insufficiency Fracture Occurring in Neck of Femur. R. L. Mansi.—p. 119.
Familial Vertebral Dystrophy: Case Reports. M. Halberstaedter.—p. 121.
Effect of Ionizing Radiations on Broad Bean Root. L. H. Gray, J. Read and M. Poynter.—p. 125.

British Medical Journal, London

1:497-528 (April 24) 1943

*Cerebrospinal Fever: Analysis of 3,575 Case Reports, with Special Reference to Sulfonamide Therapy. P. B. Beeson and Ethel Westerman.—p. 497.
*Chemotherapy and Serotherapy in Cerebrospinal (Meningococcic) Meningitis: Analysis of 3,206 Case Reports. A. A. Jubb.—p. 501.
Rare Cause of Severe Gastrointestinal Hemorrhage, with Note on Aneurysm of Hepatic Artery. G. Gordon-Taylor.—p. 504.
Membranous Inflammation of Oropharynx, Nose and Conjunctiva Due to Sulfathiazole Administration. I. M. Schnee.—p. 506.
Effect of Acid, Alkali and Meals on Blood Level and Excretion of Sulfapyridine in Children. H. E. C. Wilson.—p.507.

1:529-556 (May 1) 1943

Investigation of Hemolytic Transfusion Reactions. P. L. Mollison.—p. 529.
Three Cases of Prolonged Fecal Fistula Following Operation for Appendicitis. P. T. Crymble.—p. 532.
Complacency in Resuscitation of Drowned. F. C. Eve.—p. 535.
Blast Injury to Abdomen by Depth Charge. D. D. Pinnock and P. Wood.—p. 537.
Intolerance to Liver Extract in Pernicious Anemia. Elizabeth Delikat.—p. 539.

Sulfonamide Therapy in Cerebrospinal Fever.—Beeson and Westerman base this study on 3,575 cases of cerebrospinal fever which were submitted to the Ministry of Health by more than a hundred widely scattered hospitals of England and Wales during the two year period June 1939 to June 1941. All but 19 patients were treated with sulfonamides, and 965 of them received some form of specific serum therapy. The disease occurred most often in infants and young children, 45.5 per cent of the patients being under 15 years of age. The ratio of males to females was 6 to 4. The fatality rate for all patients was 15.94 per cent; it was greatest at the extremes of life and least in the 15-19 years age group. Thirty-eight per cent of the deaths occurred within twenty-four hours of the time of admission to the hospital. The most frequent complications were cranial nerve paralysis, arthritis and deafness. The case fatality rate in 2,591 cases in which sulfonamides alone were used was 14.3 per cent. In an additional 965 cases, in which serum treatment was combined with chemotherapy, the fatality rate was 18.8 per cent. The poorer result was probably due in part to the fact that serum was administered to more severely ill patients. There is no indication that the administration of serum as an adjuvant to sulfonamide therapy is beneficial. In the treatment with sulfonamides a considerable variation appears to be possible in dosage and duration of therapy without noticeable effect on the fatality rate. Statistically the results were about the same whether chemotherapy was begun early or comparatively late in the course of the disease. This can be attributed to the fact that the more severely ill tend to be sent to the hospital sooner than those who are mildly ill. The age of the patient is of distinct importance in determining the outcome of meningococcic infection even with the aid of sulfonamide therapy.

Chemotherapy and Serotherapy in Meningitis.—Jubb reviews 3,206 cases of meningitis treated in hospitals either by chemotherapy plus serum or by chemotherapy alone and surviving more than twenty-four hours after admission. The fatality rate in the total number was 10.5 per cent; in the 849 cases treated with chemotherapy plus serum it was 13.8 per cent; in the 2,357 cases treated with chemotherapy alone it was 9.2 per cent. In the five years 1936-1940 there was a steady decline in the fatality of cerebrospinal fever, the annual rates being successfully 63.8, 61.2, 50.6, 34.2 and 20.2 per cent. In a series of cases treated in the period 1931-1934 with serum of improved quality and administered suitably the rate was 27.9, but a decrease of the rate for the whole country did not occur until the introduction of chemotherapy; with the wider employment since 1938 of the sulfonamide derivatives the decline has been dramatic. In 1941 the rate was 19.5 per cent and in the first half of 1942 it was 19.5, as against 19.9 in the corresponding periods in 1940 and 1941. It is possible, therefore, that 1942 will show only a slight further decrease.

Lancet, London

1:481-512 (April 17) 1943

*Oxygen Therapy in Shock. G. Melton.—p. 481.
Necrosis of Islets of Langerhans Produced Experimentally. J. S. Dunn, H. L. Sheehan and N. G. B. McLetchie.—p. 484.
*Paratyphoid B Infection: Ineffectiveness of Sulfaguanidine. T. F. M. Scott, P. B. Beeson and W. L. Hawley, with technical assistance of W. Goode, Miss E. Hathaway and Miss E. Jackson.—p. 487.
Fluorine Distribution. C. N. Bromehead, Margaret M. Murray and D. C. Wilson.—p. 490.

Oxygen Therapy in Shock.—Melton gave high concentrations of oxygen to patients with peripheral circulatory failure. In order to assess the effect of oxygen independently of other therapeutic measures such as transfusions and drugs, oxygen was frequently begun as soon as possible after the patient was admitted. Patients with shock treated fell into the following groups: (1) 8 patients with trauma due to accidents or operations, (2) 12 patients with nontraumatic hemorrhage, (3) 5 patients with peritonitis due to perforated viscus or strangulation and (4) 3 patients with postoperative lung complications. A small miscellaneous group of patients with peripheral circulatory failure and severe collapse were also studied and include 1 with asthma, 1 with pneumonia and 1 in diabetic coma. The observations show that oxygen is of benefit in shock. It raises the blood pressure and improves the pulse, color, mental alertness and well-being. The results can be readily understood in the cases in which there was considerable lung involvement as cause of anoxia, but striking improvement was also obtained when the heart and lungs were not affected. The beneficial action of oxygen was seen in shocked patients during and immediately after an operation. It was also observed in patients who had not received an anesthetic immediately preceding the

shock. In some cases of profound shock, particularly in elderly but also in young persons, improvement was not observed. This failure was sometimes found associated with continued hemorrhage, severe infection or uremia. In some of these cases oxygen may have helped to tide the patient over a critical period, even though immediate improvement was not obvious. There were 14 deaths despite the initial improvement in 12 of these fatal cases; but most presented a hopeless prognosis from the start of the treatment. Oxygen appears to be most useful in hemorrhage which has been arrested. Hemorrhage was a definite factor in producing shock in 17 of the patients, and 13 of them improved with oxygen. With 13 patients hemorrhage was not a factor, and 10 of these improved with oxygen therapy. With the exception of 2, the patients in this group were either suffering from pulmonary complications or were recovering from a general anesthetic. Oxygen cannot replace transfusions but must be regarded as an adjuvant to such measures.

Sulfaguanidine in Paratyphoid B.—McNair Scott and his collaborators tested sulfaguanidine in an outbreak of paratyphoid B in Liverpool during July and August 1941. The number treated with sulfaguanidine was 40 and there were 48 controls. The two groups appeared to be similar in all respects. The average age of the treated patients was 16.6 years, of the untreated 15.5 years. Children under 5 years of age were excluded from the study. Sulfaguanidine was given for ten days. During the first five days the daily doses varied between 8 and 16 Gm., depending on the age of the patients, and during the last five days between 4 and 8 Gm. Sulfaguanidine was used in the treatment of paratyphoid B fever in patients who were (*a*) acutely ill, (*b*) convalescent, (*c*) persistent excretors. During the acute stage no difference was seen in the course of the disease among the treated as compared with the untreated. In the convalescent stage there was no evidence that the patients treated with the drug excreted paratyphoid B organisms for any shorter period than the control group treated with kaolin. The drug failed to clear 4 persistent excretors of the organisms.

1:513-542 (April 24) 1943

Formation of Red Blood Corpuscles. F. Duran-Jorda.—p. 513.
Vitamin C Saturation Test: Standardization Measurements at Graded Levels of Intake. L. J. Harris.—p. 515.
Spontaneous Reduction en Masse of Inguinal Hernia. G. G. Crowe.—p. 517.
Effect of Emotional Shock on Hormone Release and Endometrial Development. A. A Loeser.—p. 518.
Volkmann's Ischemia of Leg. M. Albert and W. R. D. Mitchell.—p. 519.
Observations on Ctab (Cetavlon): Its Use in Surgery. R. Williams, Barbara Clayton-Cooper, J. McK. Duncan and Ellen M. Miles.—p. 522.
*Case of Matricide. D. Hill and W. Sargant, with assistance of Mollie E. Heppenstall.—p. 526.
Anesthetic Explosion Due to Static Electricity. Elva M. Chivers.—p. 527.

Case of Matricide.—A man aged 20, accused of the murder of his mother, was found guilty but insane. Hill and Sargant report that he had always been nervous and apprehensive, not particularly aggressive and had failed to adapt himself to ordinary life, having become dependent on his mother. His meals had been irregular. Recently there had been some quarreling between the accused and his mother. On the morning of December 30 he had lost his temper and struck her, for which he had subsequently apologized. On that day he had eaten poorly, his last carbohydrate meal being at noon. In the evening he ate two small chops. Between 9 and 10:30 p. m. he had drunk 4 pints of mild ale and had then returned home. On his mother's return at 11 o'clock a quarrel developed, during which he was pushed along a passage into his own room. Despite the 4 pints of beer he suddenly felt thirst and went to the kitchen to fetch an opener for a lemonade bottle. There he saw a kitchen knife, and at this point he said "something came over" him—he "was like a homicidal maniac." He attacked his mother with a knife and killed her. A doctor who had examined the accused in 1941 suggested that an investigation be made of the carbohydrate metabolism and of the electroencephalogram. From the history and the examination it was concluded that the accused had an abnormal personality, a poor physique, severe inner ear deafness, a possible birth injury to the right hemisphere and psychopathic inheritance. He was not suffering from epilepsy or mental disease, but whenever his blood sugar was below 100 mg. per hundred cubic centimeters the electroencephalogram was abnormal, and hyperventilation would induce an abnormal electrical discharge in the cortex associated with a degree of impairment of judgment and some clouding of consciousness. From the history of his diet before the murder and the sugar tolerance tests it was practically certain that his blood sugar was below 100 mg. at the time when he murdered his mother and that hyperventilation occurred as the result of the emotion aroused by the quarrel and particularly by his being pushed struggling along a corridor. Since the murder took place over an hour after he had finished the beer, the malt sugar would not have inhibited the phenomenon. The authors concluded that the accused knew what he was doing at the time he killed his mother and knew that it was wrong but that his brain was functioning abnormally at the time, the abnormality being such as to impair his judgment and render him unable fully to appreciate the nature of the act.

1:543-572 (May 1) 1943

Mortality of Men Between Ages of 50 and 65. P. Stocks.—p. 543.
Impetigo Contagiosa: Its Cause and Treatment. J. W. Bigger and G. A. Hodgson.—p. 544.
Impetigo: Etiology and Treatment. H. L. Sheehan and A. G. Fergusson.—p. 547.
Survival of Normal Erythrocytes After Transfusion to Patients with Familial Hemolytic Anemia (Acholuric Jaundice). J. V. Dacie and P. L. Mollison.—p. 550.
*Mesenteric Venous Thrombosis: Treatment with Heparin. J. C. Luke.—p. 552.
Pfeiffer's Bacillus Meningitis: Response to Chemotherapy. J. N. P. Davies.—p. 553.
*Response of Pfeiffer's Bacillus Meningitis to Sulfapyridine. R. A. Moir.—p. 556.
Tetanus in Immunized Subject. H. B. Norman.—p. 557.

Heparin in Mesenteric Venous Thrombosis.—According to Luke, mesenteric thrombosis is the most lethal of the causes of bowel obstruction. The reported series show that the chance of survival is almost nil without operation. The operative mortality of resection averages about 50 per cent. The main factor of this high rate is a continuation of the thrombotic process beyond the limits of the resected bowel. It is here that the experience with heparin is encouraging. It occurred to Luke that in the early cases of mesenteric venous thrombosis, in which it could be shown that the involved bowel was still viable, heparin alone would be a logical method of treatment. This plan was adopted for a man aged 42 whose history and physical signs suggested an early obstruction of the small intestine. When the abdomen was opened, early mesenteric venous thrombosis was diagnosed and it was decided to treat the patient with heparin alone. The drug was administered by intravenous drip (10 cc. of heparin in 1,000 cc. of isotonic solution of sodium chloride). The total amount given in the course of ten and one-half days was 210 cc. The patient was out of bed on the fourteenth day and was discharged on the seventeenth. The author suggests that early cases of mesenteric venous thrombosis seen before serious intestinal infarction has taken place and when the bowel is definitely viable should be treated with heparin alone.

Sulfapyridine in Pfeiffer's Bacillus Meningitis.—Moir reviews 4 cases of influenzal meningitis in which sulfapyridine was used. Two of the patients, one a child of 10 months, recovered. The number of cases described is too small for precise conclusions, but from this experience the best form of treatment seems to be diagnostic lumbar puncture, to be repeated only if restlessness and irritability become uncontrollable by other means or when the fluid might be expected to be sterile (i. e., when the clinical condition has much improved). The concentration of the sulfapyridine in the cerebrospinal fluid should be as high as possible, and repeated lumbar puncture can serve only to reduce the concentration. Large doses of sulfapyridine should be given (never less than 3 Gm. in twenty-four hours) and reduced doses should be given for at least a fortnight after meningitic symptoms have disappeared. Fluids should be pressed in order to prevent renal complications. Dehydration and vomiting are best combated by intravenous drip salines, and this provides a convenient method for the administration of sulfapyridine, which seems worth a trial in all cases of Pfeiffer's bacillus meningitis.

Bull. Health Organ., League of Nations, Geneva

10:1-76, 1943. **Partial Index**

Present Menace of Typhus Fever in Europe and Means of Combating It. Y. Biraud.—p. 1.
*Contribution to Study of Metabolism of Vitamin C and Elimination in Urine. F. M. Messerli.—p. 65.

Metabolism of Vitamin C and Its Elimination in Urine.—Messerli reports investigations on the elimination of vitamin C in the urine of Lausanne school children. A modification of the method of Gander and Niederberger was used. The rate of excretion was on an average 1.4 to 1.5 mg. per hundred cubic centimeters in 1940-1941. This amount varied according to feeding and to the social conditions of the children. Body posture, rest, exercise and exposure to sun seemed to have no influence on the excretion. In saturation tests in cases of vitamin balance ingestion of ascorbic acid is followed quickly by an increase of excretion; this increase is not observed immediately in cases of vitamin insufficiency. This test might be used for control of vitamin C sufficiency. For this purpose the urine should be titrated three or four times every half hour after the ingestion of 0.05 Gm. of ascorbic acid. A rise in vitamin excretion would signify vitamin sufficiency; the absence of rise, vitamin insufficiency. Children who for a month received a daily preventive dose of 0.05 Gm. of ascorbic acid and whose vitamin excretion in the urine had greatly increased in consequence were absent from school on account of illness only half as frequently as their schoolfellows who did not receive vitamin C. Vitamin C saturation tests did not reveal any increase in albuminuria.

Schweizerische medizinische Wochenschrift, Basel

72:1141-1168 (Oct. 17) 1942. **Partial Index**

Eczema and Eczema-like Dermatitis. W. Lutz.—p. 1141.
*Efficacy of Extrapleural Pneumothorax. M. Arnold.—p. 1144.
*Cirrhosis Caused by Schistosomiasis and Cirrhosis in General. R. Jaffé.—p. 1149.
Riboflavin Metabolism in Two Patients with Generalized Eczema, Who Had Lived Chiefly on a Raw Diet. A. F. Kunz.—p. 1154.
Treatment of Diphtheria and Scarlet Fever in Institutions. W. Hoffmann.—p. 1160.

Extrapleural Pneumothorax.—Arnold regards as indication for the extrapleural pneumothorax active, progressive, chiefly exudative and cavernous, usually febrile, pulmonary tuberculosis. The procedure is also indicated in relatively inactive, partly productive and partly exudative cavernous and perhaps subfebrile types. Total obliteration of the intrapleural space by a previous pleurisy or failure to produce an intrapleural pneumothorax or to improve it by thoracocautery are the prerequisites. A marginal group is represented by the inactive, nonprogressive, cirrhotic, cavernous and febrile pulmonary tuberculosis. Maurer's thoracoplasty, with the removal of five ribs in two stages, is much less dangerous for the heart. The author stresses care in the management of the costal gap, caution in the handling of the intercostal vessels, treatment of cough, avoidance of increase in pressure by refilling with air, avoidance of premature puncture of serous effusion, evacuation of infected collections of serum with local application of sulfathiazole, daily puncture of hematomas and refilling of dry pneumothorax. If these points are adhered to, pneumothorax will effect a cure and will avoid the disadvantages of plastic operations such as residual cavities, permanent collapse and disfigurement. On the basis of observations on the first 50 patients the author believes that extrapleural pneumothorax is particularly effective in bilateral collapse therapy. It has the advantage in that the healthy lower lobe remains adherent to the thoracic wall and diaphragm and thus obtains maximal ventilation. Extrapleural pneumothorax has a greater sphere of applicability than a thoracoplasty. The five rib thoracoplasty of Maurer most nearly approaches the efficacy of extrapleural pneumothorax.

Cirrhosis Caused by Schistosomiasis and Cirrhosis in General.—Study of cirrhosis caused by Schistosomum mansoni makes it possible to review problems that concern cirrhosis in general. Jaffé agrees with Fiessinger that the anatomic basis is the same in all forms of cirrhosis. The author is convinced that this disease is systemic and that the hepatic lesions represent changes in one organ. Changes in the liver may be the only recognizable organic change. The spleen or other organs may be involved at times. The causes of these differences are not known. Cirrhosis is essentially a parenchymal impairment of the liver. Primary damage of other parts of the liver have not been demonstrated. Changes in other tissues, such as the stellate cells, the lattice fibers and the connective tissue cells, are secondary to the parenchymal lesions. The degree and distribution of the parenchymal lesions determine the further changes. The same cause may produce various types of cirrhosis. It is of no importance whether the hepatic process is regarded as a chronic inflammation or as a transformation. The parenchymal lesion is primary and other lesions are elicited by it. A classification of cirrhosis on the basis of its anatomic appearance is not logical. Jaundice, as an accompanying symptom, is caused by the same parenchymal lesion as the cirrhosis; mechanical factors play a secondary role.

72:1213-1236 (Oct. 31) 1942. **Partial Index**

Differential Diagnosis of Sanguineous Apoplexy. A. von Albertini.—p. 1213.
Methyl-Amphetamine (Pervitin) and Female Genital System. W. Neuweiler.—p. 1217.
*Mechanism of Median Fracture of Neck of Femur: Treatment by Nailing According to Sven-Johannsen. O. Häuptli.—p. 1220.
*Therapy of Herpes Zoster. K. Blum.—p. 1223.
Roentgenologic Examination of Esophageal Spasm Can Lead to Error in Localization of Causal Lesion. F. Naville and R. Herrmann.—p. 1224.

Sven-Johannsen's Nailing in Median Fracture of Neck of Femur.—Häuptli reports 43 osteosyntheses carried out for fractures of the neck of the femur between 1935 and 1941. During 1935 and 1936 Henschen's screw method was employed in 4 cases. The results were good in 3 and poor in 1. Eight patients were subjected to Sven-Johannsen's nailing without the guiding instrument, with poor results in half of the cases. Nailing according to Sven-Johannsen was done in 5 cases with the aid of the original guiding instrument of Valls. The results were excellent in 4 cases and poor in 1. During the years 1939 to 1941 Sven-Johannsen's method was employed in 26 cases with Ulrich's "infallible" modification of the directing instrument of Valls. The results were excellent in 22, satisfactory in 2 and poor in 2 cases.

Therapy of Herpes Zoster.—The fact that sulfanilamide and a salt free diet produced favorable therapeutic results in postinfections and polyneuralgic conditions suggested to Blum that these measures, together with vitamins B_1 and C, be used early in the treatment of herpes zoster. In view of the virus origin of this disorder he suggests that the same therapeutic methods might be of value in other virus diseases, such as poliomyelitis, measles, acute epidemic encephalitis or venereal lymphogranuloma.

Acta Medica, Rio de Janeiro

10:157-180 (Dec.) 1942. **Partial Index**

*Quinine and Other Antimalarial Drugs: Experiments. S. B. Pessôa.—p. 157.
Tetanus Vaccination. J. Guilherme Lacorte.—p. 172.

Antimalarial Drugs.—Pessôa experimented with canaries previously inoculated with Plasmodium cathemerium. He found that the antimalarial effect of quinine hydrochloride is greater when the drug is administered intramuscularly than when it is given by mouth. Bolivian quinine sulfate is as efficacious as Java quinine. Potassium tannate injected intramuscularly has no plasmocidal properties. Potassium tartrovanadate has a plasmocidal effect only when it is administered in large doses. Such administration is dangerous because the therapeutic dose is close to the toxic dose. Sodium arsenate has no plasmocidal effect even in the highest tolerable doses.

Boletín de la Sociedad Cubana de Pediatría, Havana

15:105-152 (March) 1943. **Partial Index**

*Cerebral Tuberculosis in Disseminated Forms of Primary Tuberculosis in Infants. T. Valledor.—p. 105.

Cerebral Tuberculosis in Infants.—The 4 infants observed by Valledor were living with tuberculous members of the family. They exhibited acute symptoms of disseminated primary tuberculosis. Disseminated miliary tuberculosis and one or more tuberculous nodules were found during a necropsy in the brain in 2 cases. Development of miliary cerebral tubercles in primary miliary tuberculosis is the starting point for a latent tuberculous

meningitis which manifests itself by symptoms of increased intracranial pressure, convulsions, acute headache, exaggerated reflexes, a positive MacEwen sign, vomiting and coma. The course of the disease is rapidly fatal. The symptoms are those of a subacute hydrocephalus without increase in the size of the head. The spinal fluid is chemically and bacteriologically normal in the course of the disease, which develops with neither meningeal symptoms nor pathognomonic signs of a brain tumor.

Revista Clínica Española, Madrid

7:173-236 (Nov. 15) 1942. **Partial Index**

Regulation of Glycemia. F. Grande Covián.—p. 173.
Studies on Malnutrition. C. Jiménez Díaz, L. Lorente, C. Marina, E. Ortiz De Landázuri, G. Paniagua and E. Roda.—p. 184.
*Glutathione in Blood of Patients with Nutritional Deficiencies. J. Cruz Auñón and J. Rivero Fajardo.—p. 189.
Subdural Hematoma (Internal Hemorrhagic Pachymeningitis of Virchow) in Course of Typhoid. A. Ley.—p. 195.
Action of Sex Hormones on Intestinal Movements. R. Sánchez-Calvo.—p. 200.
*Problem of Vitamin A in Nutrition of Pregnant Women. J. Botella Llusiá and J. M. Hernández Araña.—p. 203.

Glutathione in Blood During Nutritional Deficiencies.—Cruz Auñón and Rivero Fajardo show that the reduction of the glutathione values (thioamino acids) in the blood is the best proof of a diet which contains no animal proteins or has inadequate amounts of these substances which are rich in thioamino acids. They gained the impression that "mal de Casal" is due to a meat deficiency and that hunger edema is due to universal deficiency. In Casal's disease the reduction in the glutathione content is considerable and in hunger edema it is even more severe.

Vitamin A in Pregnancy.—Botella Llusiá and Hernández Araña tested the dark adaptation of 140 pregnant women. They detected impairment of night vision in 69 per cent of the pregnant women in whom the vitamin A content of the diet could not be controlled. Women with evident avitaminosis showed this defect in 95 per cent of the cases. Only 10 per cent of the pregnant women who received their food from the "social aid" organizations showed defects of the dark adaptation. This proves that the food provided by these organizations is adequate from this point of view. Since during pregnancy the organism partly loses its capacity to utilize carotene, it is advisable to administer preformed vitamin. Furthermore, the nutritional requirements of the fetus increase the vitamin A requirements of the mother during pregnancy. Fats are of great importance in the diet of pregnant women because they are vehicles of vitamins and of carotene. The authors recommend that pregnant women should receive daily 4,000 international units of vitamin A and 50 Gm. of fat.

7:237-300 (Nov. 30) 1942. **Partial Index**

Thyroids and Gestation. F. Bonilla.—p. 237.
*Investigations on Sympathetic Disorders: Clinical Aspects of Neurodystonias (Premenstrual Tension and Neurosis of Exophthalmic Goiter). C. Jiménez Díaz and L. Lorente.—p. 248.
Results of Tests with Dust Extract Obtained by Precipitation on Patients with Asthma and Rhinorrhea. R. Alemany Vall.—p. 251.
Lathyrism. J. M. De Miguel and E. L. Galiacho.—p. 254.
Electric Shock Therapy in Asthma. B. Sánchez-Cuenca and J. López Ibor.—p. 260.
True and False Anemias in Pregnancy. J. Botella Llusiá and M. Echarri.—p. 262.
Parinaud's Conjunctivitis as Clinical Manifestation of Primary Tuberculous Infection. A. García Miranda and J. Gómez Orbaneja.—p. 269.

Neurodystonias.—Jiménez Díaz and Lorente examined alcohol-acetone soluble extracts of urines of 10 normal persons on different days, of a patient with migraine during and after an attack, of 2 patients with exophthalmic goiter with severe neurodystonia and of a patient with premenstrual hypertension at various times during the cycle. It was observed that the patients with exophthalmic goiter and the one with migraine eliminated during their crises a substance with an intense acetylcholine effect. The woman with the premenstrual hypertension had the same substance in the premenstrual urine, whereas at other times her urine was free from it. The urines of the 10 healthy subjects were free from these effects. In the presence of a sympathetic neurosis, as well as in migraine, the substance is present in excessive quantities. The authors direct attention to the role of acetylcholine in the excitation of the sympathetic nervous system.

Semana Médica, Buenos Aires

50:250-292 (Feb. 4) 1943. **Partial Index**

*Therapy of Asphyxia in Newborn Infants by Administration of Oxygen-Carbon Dioxide Mixture to Mother. R. Schwarcz, F. Nessi and R. M. Pinto.—p. 250.
Pathogenesis of Hemoptysis. H. Basabe.—p. 253.
Functional Reactions of Phenytoin Sodium: Method for Its Evaluation. Rosa C. D'Alessio de Carnevale Bonino.—p. 289.

Therapy of Asphyxia in Newborn Infants.—Schwarcz and his collaborators advise the routine administration of oxygen-carbon dioxide mixture by inhalation to all mothers who give birth under anesthesia, even if the latter is mild. The therapy is especially indicated when fetal respiration is not rapidly established. Oxygen-carbon dioxide mixture should be administered to the mother before sectioning the umbilical cord. Immediately after the inhalation of the oxygen, respiration of the mother improves and pulsation of the umbilical cord increases. The necessary requirements for obtaining results from the administration of oxygen-carbon dioxide mixture are intact umbilical cord, an unimpaired center of respiration of the fetus, upper respiratory tract free from mechanical obstruction, and lungs of normal distensibility. The author's group of 36 mothers includes cases of spontaneous labor, application of forceps, internal version and cesarean section. Good results were obtained in all cases but 3. Obstruction of the upper respiratory tract with mucus was the cause of failure of oxygen-carbon dioxide therapy in these cases. The infants were reaminated by aspiration of mucus and insufflation of the oxygen-carbon dioxide mixture.

50:301-356 (Feb. 11) 1943. **Partial Index**

*Inguinoscrotal Hernia with Mixed Contents, Including Stomach. J. M. Jorge, L. Feldman and T. Iturrioz.—p. 301.
*Diagnosis of Epilepsy by Means of Pentamethylene Tetrazol. I. Roismiser.—p. 310.
Myocardial Infarct in Youth Aged 20. A. P. Ruchelli and A. J. Marra.—p. 314.
Mucous Cyst of Left Labium Minus Pudendi. D. Bassan.—p. 343.
Sulfonamide Chemotherapy in Gonococcic Arthritis. R. E. Meroni.—p. 348.

Inguinoscrotal Hernia Containing Stomach.—Jorge and his associates report the case of a man aged 66 with a double inguinoscrotal hernia. The one on the right side was enormous. Roentgenoscopy with an opaque meal revealed that parts of the stomach and intestine were present in the large hernial sac on the right side. The smaller hernia was operated on successfully and the wound healed by primary intention. The patient was instructed to return later for operation on the larger hernia. He was hospitalized in a state of prostration and dyspnea and died as the result of a bronchopulmonary process. The necropsy revealed the presence of the stomach in the hernial sac. The authors were able to find only 22 cases of this type in the literature. They stress the importance of a preoperative roentgenologic examination and point out that these giant hernias are compatible with a good general condition.

Diagnosis of Epilepsy by Means of Metrazol.—Roismiser points out that metrazol shock therapy led to the use of this substance in the differential diagnosis of epilepsy. He describes his observations on 56 subjects, 38 of whom were epileptic and 18 were not. Of the first group 92.1 per cent responded with a typical crisis to the intravenous injection of 3 cc. or less of a 10 per cent solution of pentamethylenetetrazol. The test was always begun with the injection of 1 cc. Two of the epileptic patients reacted with an attack to this dose, 3 reacted to 1.5 cc., 12 to 2 cc., 8 to 2.25 cc., 2 to 2.5 cc., 8 to 3 cc. and 3 required more than 3 cc. for the production of a crisis. The 18 subjects who were not epileptic all required more than 3 cc. for the production of a convulsive attack.

Deutsche medizinische Wochenschrift, Leipzig

68:209-236 (Feb. 27) 1942. **Partial Index**

*Question of Vitamin C Requirements. H. Kalk and W. Brühl.—p. 209.
Significance of Ascorbic Acid in Cerebrospinal Fluid from Point of View of Differential Diagnosis. J. Wirth.—p. 212.
Therapeutic Short Wave Hyperthermia. K. von Teubern.—p. 215.
Use of Marfanil-Prontalbin Powder in Surgery. R. Stapf.—p. 221.

Vitamin C Requirements.—Kalk and Brühl report observations on a man who had lived on a diet free of vitamin C. He was hospitalized with all the symptoms of scurvy. The development of the scurvy had been favored by inadequate

nutrition, hard physical labor, an infection (otitis media) and achylia. In spite of a continued vitamin C free diet, bed rest alone counteracted the scorbutic symptoms, although no vitamin C could as yet be demonstrated in the serum. Administration of small quantities of vitamin C (10 and 25 mg. daily by mouth) increased the vitamin C content of the blood in spite of an existing achylia. The scurvy was practically cured at a time when the serum still contained extremely small amounts (0.3 mg. per hundred cubic centimeters). With the daily administration of 25 mg. on a diet that was practically free from vitamin C and in the presence of "normal" vitamin C values in the blood a good working capacity and complete freedom from symptoms could be maintained. This status continued even after the vitamin content sank to low levels following cessation of the administration of vitamin C. The authors stress that the development of scurvy is rare even in a population with a low vitamin C intake. Only 5 cases of scurvy were encountered in about 16,000 patients. This rarity shows that vitamin C deficiency alone is not sufficient for the development of scurvy. Other factors detrimental to the vitality must be added, such as lack of sleep, infections, hard physical labor and starvation. A daily quantity of 25 mg. of ascorbic acid is adequate to prevent hypovitaminotic conditions.

Klinische Wochenschrift, Berlin

21:1-24 (Jan. 3) 1942. **Partial Index**

Electroencephalogram a Method for Investigating High Altitude Sickness. A. E. Kornmüller, F. Palme and H. Strughold.—p. 5.

Capillary Permeability in Acute and Chronic Nephritis. H. Sarre and H. Sostmann.—p. 8.

*Chemoprophylaxis of Gas Gangrene: Local Application of Sulfonamides and Prospects of Their Efficacy Under Nearly Normal Conditions (Soil Contaminated Crushed Wounds). H. T. Schreus.—p. 14.

Action of Water Soluble Desoxycorticosterone on Carbohydrate Metabolism. O. Göbell and H. J. Benkner.—p. 17.

Local Application of Sulfonamides in Soil Contaminated Wounds.—Schreus investigated the efficacy of various sulfonamides when introduced locally into soil contaminated crushed muscles (intensified Friedrich's experiment). He found that the efficacy in suppressing the development of gas gangrene depended on the quantity of the drug introduced as well as on the time which had elapsed between the infliction of the wound and the administration. When the drug was applied to the wound before six hours had elapsed, comparatively small quantities were adequate to prevent gas gangrene, but when administration took place between six and eight hours larger quantities were necessary. Neither the pure sulfonamides nor their combinations with one another or with boric acid or methenamine were capable of preventing the death of the animals from gas gangrene if introduction into the wound was delayed more than nine hours. The sulfonamides act on the gas gangrene organisms locally as well as by absorption. Since there is no danger of injury to the tissues, the author recommends the combined local and systemic administration.

21:49-72 (Jan. 17) 1942. **Partial Index**

*Sodium Chloride and Diastase Values in the Blood of Patients Suffering From Diabetes Mellitus. M. Dörle.—p. 53.

Monophasic Deformation of Electrocardiogram in Lead Three. A. Weiss.—p. 56.

Alpha-Tocopherol Acetate (Vitamin E) Substitutes for Progesterone in Uterus Test Performed in Castrated Rabbits. F. Stähler and W. Hopp.—p. 58.

*Concentration of Riboflavin in Carcinoma and Excretion of Riboflavin by Patients Suffering from Tumor. H. Leemann.—p. 60.

Influence of Iontophoresis of Histamine on Blood Cell Formula. J. Friesz and T. v. Gorka.—p. 62.

Thymotropic Hormone of Anterior Lobe of Hypophysis and Thymus Hormone. W. Biehler, G. Hanisch and H. Wollschitt.—p. 63.

Blood Sodium Chloride and Diastase in Diabetes Mellitus.—Dörle says that blood diastase varies considerably in the blood of normal persons. The fall in blood diastase below 80 mg. per hundred cubic centimeters is abnormal and occurs in severe diabetes associated with ketonuria, inflammatory complications, grip infections, cachexia and severe anemia. The decline in diastase values parallels a fall in blood sodium chloride in many instances and an increase in blood sugar in diabetic patients. But this parallelism is not a real one. Isolated disturbances of these substances are possible. The fall of sodium chloride and diastase of the blood does not depend on a certain type of metabolic disorder or on a special kind of organic disease. The fall is secondary to disturbances of nutrition. Sodium chloride blood content, blood sugar and diastase are related to the metabolism. High blood sugar values and low sodium chloride and diastase content may parallel other disturbances, as in severe acidosis of diabetes. Diastase seems to be the most labile element of all. It is readily lowered by a general or toxic disturbance of nutrition.

Riboflavin in Carcinoma.—Leemann determined the riboflavin content of tumor tissue and of tissues of normal organs. The concentration of riboflavin in carcinomatous tissue is higher than in the matrix and in the normal tissue. On the contrary, the concentration of riboflavin in tissues of normal organs was lower than that of the average values present in normal tissues of persons not affected with a malignant tumor. The increased demand of the tumor for vitamin B_2 is responsible for the impoverishment of riboflavin in other organs, which in turn results in a reduction of the excretion. While persons not suffering from carcinoma excreted within two days 70 per cent of riboflavin administered to them parenterally, persons with a tumor did not excrete more after parenteral administration of riboflavin.

Zentralblatt für Chirurgie, Leipzig

69:129-160 (Jan. 24) 1942

*Local Causes of Postoperative Development of Jejunal Ulcer. E. Sipos.—p. 130.

Intestinal Occlusion by Gallstones. D. Klimkó and L. Fedeles-Findeisen.—p. 145.

Local Causes of Postoperative Jejunal Ulcer.—Sipos believes that postoperative jejunal ulcers are largely preventable by careful attention to the local conditions during the first operation. The fact that they develop only after a gastrojejunostomy indicates that the new position is a cause. The fact that not every gastrojejunostomy is followed by jejunal ulcer suggests that other factors play a part. The author differentiates two groups of causes: (1) those that intensify the harmful effects on the intestinal mucosa and (2) those which reduce the resistance. It is not the absolute severity of a single factor but the relationship of the two groups of factors that is decisive. Case histories demonstrate that one of the local causes of postoperative jejunal ulcer is the improper operation such as a gastroenterostomy for a perforation or enteroanastomosis according to Brown and Roux. The patient should be prepared for operation by blood replacement and by normalization of the mineral and water balance and of the vitamin C deficit. In case of prepyloric ulcer the vicious circle of stasis, prolonged secretion, inflamed mucosa, muscle spasm and atony must be interrupted. Systematic evacuation of the stomach relieves the spasticity of the musculature, and irrigation of the mucosa reduces inflammation. Gastrojejunostomy should not be performed for a perforation. Only that operation can be considered as optimal which eliminates overburdening of the mucosa, preserves intestinal resistance and produces, as far as possible, normal physiologic conditions for the gastrointestinal function. In case of a resectable ulcer, removal of the distal half of the stomach is usually adequate; two third and four fifth resections are inadvisable. For a palliative resection it is advisable to remove all the antral mucosa and resect more extensively. A relatively small anastomotic opening is desirable in order that the stomach may complete its digestive action, exhaust the effect of the gastric juice and prevent bile regurgitation. That position of the stoma will be the most advantageous which will permit evacuation of the stomach contents into the descending loop. Since inadequate blood supply probably favors the development of ulcers, the most careful handling of the tissues is essential. A fine absorbable suture material should be used. Roux's or Brown's enteroanastomoses should never be employed. It is advisable to avoid spinal, paravertebral or splanchnic anesthesias; with a careful surgical technic, infiltration anesthesia of the abdominal walls is adequate.

Book Notices

Textbook of Biochemistry. By Benjamin Harrow, Ph.D., Professor of Chemistry, City College, College of the City of New York. Third edition. Cloth. Price, $4. Pp. 537, with 118 illustrations. Philadelphia & London: W. B. Saunders Company, 1943.

The last few years have witnessed vast progress in the field of biochemistry. Considerable advancement has been made in the field of the intermediate metabolism of carbohydrates, fats and protein and in the employment of isotopes as tracer elements for complicated or little understood biologic mechanisms. The last years have also witnessed great developments in the fields of enzymes, vitamins and hormones, in the field of biologic oxidations and in our knowledge concerning the breakdown and synthesis of glycogen through systems of enzymes and coenzymes. The very fertile fields of viruses, of bacteriostatic or bactericidal compounds, such as gramicidin and penicillin, of immunochemistry and of chemotherapy have also been energetically explored. Medical practice has derived its share of profit from the applications of the newer knowledge of biochemistry to problems of diagnosis, prognosis and treatment.

The rapid advances in biochemistry call for considerable revision in any edition of biochemistry more than three years off the press. The first edition of Harrow's Textbook of Biochemistry was published in 1938, the second in 1940 and the third this year. All the important late findings in the biochemical field have been incorporated in the new edition. In the unfortunate attempt, however, on the part of the publishers to keep down the size of a book in the most rapidly expanding field of science, the newer topics for the greater part have been treated with the brevity of a dictionary and do not receive the adequate treatment befitting a modern textbook of biochemistry that lays claim to being up to date.

Nevertheless, Harrow's new edition has many excellent features. The text reads well. The language is simple and clear and to the point. The graphs and pictorial illustrations are exceptionally well chosen. Among the illustrations are photographs of animals and human beings with various mineral, vitamin or hormone deficiencies, photographs of enzymes in crystalline form, such as urease, pepsin, trypsin and chymotrypsin, and photomicrographs of molecules of tobacco mosaic virus made by means of the electron microscope with a magnification of 34,000 to 37,000.

The book literally abounds with graphic formulas and completed chemical equations. The chemical synthesis of vitamin B_1 and of androsterone is given, all the intermediate steps being represented by formulas. The various reactions involved impart to the student an insight into the problems concerned with the synthesis of an important biochemical compound. Each chapter ends with a page or two of references unique in that they differ from an ordinary list of authors, titles and journals. They aim to guide the student to the best literature—books, reviews and individual articles—on a particular topic.

Whenever the author goes into a subject at some length he proves to be at his best and succeeds in giving to the student a comprehensive view of the subject. It is for this reason that the chapters on carbohydrates, on proteins, on enzymes, on vitamins, on hormones, on detoxication, on the chemistry of respiration, on biologic oxidations and on the metabolism of carbohydrates, which includes the breakdown and synthesis of glycogen, are the best in the book. If this book is to be kept confined to a limited number of pages, it is suggested that in future editions chapter 7, on foods, could be well omitted, since the material included really belongs to a book on dietetics or nutrition, and chapter 20 on energy metabolism could well be relegated to a textbook of physiology.

The book on the whole is valuable to a college or university student, undergraduate or graduate, who is desirous of acquainting himself with the subject matter of biochemistry. It covers the usual requirements of courses in this subject offered to students in agriculture, in nutrition and to college students in general. The volume also constitutes a valuable textbook for the student of medicine or for the progressive physician for the emphasis it lays on the purely chemical side of biologic chemistry. Its usefulness to the medical student or to the physician, however, would be greatly enhanced had the subject matter been treated more liberally from a biologic point of view and applied to or brought into direct relation with the chemical problems involved in disease.

Intensive Rural Hygiene Work in the Netherlands East Indies. By J. L. Hydrick, M.D. With an introduction by Professor J. Snapper. This Study has Been Reprinted, with Slight Revisions, from a Report of the Public Health Service of the Netherlands East Indies, Published in 1937. It is Submitted as a Document for the Eighth Conference of the Institute of Pacific Relations, December 1942. Booklets of the Netherlands Information Bureau, No. 7. Paper. Pp. 83, with illustrations. New York: Netherlands Information Bureau, 1942.

Although this booklet purports only to describe the program of public health in the rural parts of the Netherlands East Indies, especially in Java, its scope is actually far broader. The author's account of the development of the program serves as a basis for a discussion of the general principles that might well apply to the conduct of public health work in any part of the world. While the author does not presume to do more than present the philosophy underlying the program in the East Indies, he has actually written a treatise that merits careful examination by all students of public health, and especially by those engaged in rural areas. His underlying tenet is that lasting progress can be made no faster than the public is educated to appreciate and to want improved conditions of sanitation and health. Enforcement of laws that are neither understood nor supported and the indiscriminate rendering of health services to an unappreciative public are rejected as of no permanent value, even though he concedes that they may yield dramatic yet fleeting results. The author supports the thesis that education, though slower, yields more lasting and hence greater return. Special emphasis is placed on the personal type of education rather than the dramatic health propaganda so commonly encountered. The author stresses the desirability of completely separating preventive from curative aspects of public medical service. Though somewhat rambling in style and repetitious in places, the pamphlet is one that should be read by all interested in the promotion of public health, whether in the Netherlands East Indies or in the United States.

Manual of Veterinary Bacteriology. By Raymond A. Kelser, D.V.M., A.M., Ph.D., Brigadier General, United States Army; Chief, Veterinary Division, Surgeon General's Office, War Department, Washington, D. C., and Harry W. Schoening, V.M.D., Chief, Pathological Division, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C. Fourth edition. Cloth. Price, $6.50. Pp. 719, with 94 illustrations. Baltimore: Williams & Wilkins Company, 1943.

The appearance of this book is timely. It arrives at a moment when concerted action is being taken to guard the nation's food poundage against infections of food producing animals. Among those who labor in the field of animal medicine, the four revisions in but a few years are accounted for by the reliability of their text plus the constant development of new knowledge of animal diseases control which the veterinary service must use to accomplish its purpose. To that end the senior author, obviously overwhelmed by wartime duties, obtained the aid of Schoening and his co-workers of the Animal Disease Research Station at Beltsville, Md. That their vast experiences on the farms, ranches and abattoirs throughout the United States complement the material of previous issue is self evident and universally admitted in the livestock sanitary circle. In this place it ought to be sufficient to say that this book covers all the main bacterial, protozoal and virus infections to which the domestic animals of the United States are exposed, directly or indirectly. Although the subjects are arranged according to the familiar pattern, the material is more of a pathologic than of a bacteriologic character. Since the objective is the mastery of disease, the details of prophylaxis, therapeutics and hygiene are not slighted. Physicians should find interest in the chapters on tuberculosis, brucellosis, rabies, the encephalitides and the salmonelloses, and the ruthless war veterinarians wage against them to perpetuate the good name of the United States as a food producing country.

Aids to Tropical Medicine. By J. C. Broom, M.D., Bacteriologist to the Wellcome Bureau of Scientific Research, London. Fourth edition. Cloth. Price, $1.75. Pp. 203, with 30 illustrations. Baltimore: William Wood & Company; London: Baillière, Tindall & Cox, 1942.

In 1908 the late Gilbert E. Brooke, then port health officer of Singapore, brought out the "Aids to Tropical Medicine" as a part of the students' aids series. Three editions were published under the author's direction, the last in 1927. Since that date the field of tropical medicine has seen such changes that a new edition was in order to keep the volume in step with recent developments. The current volume by Dr. Broom fills that need. The author has attempted wherever possible to preserve the original text and form but has had to make extensive revisions and in many instances to rewrite entire sections. Dr. Broom has wisely chosen to depart from the earlier alphabetical grouping of diseases, which had nothing in its favor other than ease of reference, and has elected to group diseases on an etiologic basis. The latter method leads to better understanding on the part of the student. Each disease is discussed under a logical and fairly standard pattern including definition, geographic distribution, history, etiology, pathology, symptoms, diagnosis, treatment and prophylaxis. More attention is given the latter aspect than in previous editions. Although the total length of the volume has not been increased, the author has been able to include a section on rickettsial diseases. The volume is not intended as a comprehensive textbook of tropical medicine but rather, as its name implies, as a study aid. In this it has richly fulfilled the purpose for which it was designed.

Diagnóstico de los tumores abdominales: Oncoquiliagnosis. Tomos I y II. Por Pablo L. Mirizzi, profesor titular de clinica quirúrgica de la Facultad de ciencias médicas de Córdoba. Cloth. Pp. 670, with 192 illustrations; Pp. 671-1289, with 189 illustrations. Buenos Aires: Libreria "El Ateneo," 1941, 1942.

This work concerns itself mainly with diagnosis of abdominal tumors, to which the author refers as "oncoquiliagnosis." In volume I a general study of the abdomen as to its physical characteristics, history and physical examinations of the patient, which embraces laboratory methods, are presented. The specialized part comprises diagnostic points concerned with internal and external hernias, tumors of the peritoneum, the intestinal tract and pathologic entities of the liver. The entire presentation, which is thorough, deals with the diagnosis and differential diagnosis of abdominal tumors. The author stresses the necessity of resort to all available means to arrive at a correct preoperative diagnosis wherever possible. In volume II the author discusses diagnostic features of the gallbladder, spleen, large omentum, kidneys, pancreas, bladder and sympathetic nervous system; the material gathered here is as thorough as that in the first volume. In the chapter on the biliary passages a great deal of information is garnered. It will be recalled that it was the author who popularized cholangiography. The chapter on retroperitoneal and kidney tumors is particularly well presented. At the end of each chapter there is a review of the literature. The illustrations are clear, the paper and binding excellent. The work concludes with an author's index and a comprehensive index of subject matter. Students and others who read Spanish will find Mirizzi's book of value.

Blood Groups and Transfusion. By Alexander S. Wiener, A.B., M.D., Serologist and Bacteriologist in the Office of the Chief Medical Examiner of New York City. Third edition. Cloth. Price, $7.50. Pp. 438, with 69 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

This book has been eminently successful since it was first published in 1935. The rapid growth of our knowledge of blood groups and the widening field of their application in medicine and surgery is manifested by the increase from 220 pages in the first edition to 306 in the second and 438 in the present, with a corresponding rise in the number of tables and illustrations. The book covers the theoretical background so necessary for the understanding of this intricate subject, the technical procedures, the transfusion of fresh and stored blood, of plasma and serum and the medicolegal applications in disputed parentage and in examination of stains. The recently discovered Rh factor (the author of the book was the co-discoverer) and its applications to the prevention and understanding of blood transfusion reactions (this too a discovery by Wiener) and to the pathogenesis of fetal erythroblastosis are treated clearly and exhaustively in a new chapter. Another new chapter is devoted to recent developments in the use of stored blood and blood substitutes. The presentation is lucid. Small print permits one to skip details less interesting to the nonspecialist. The index is well organized. The general practitioner and every physician regardless of specialty will find in this monograph all that is worth knowing in the field it covers.

A History of Nursing. By Deborah MacLurg Jensen, R.N., M.A., Instructor in Sociology and Social Problems at Schools of Nursing of St. Louis City Hospital and St. Luke's Hospital, St. Louis. Cloth. Price, $2.75. Pp. 310, with illustrations. St. Louis: C. V. Mosby Company, 1943.

Modern medicine and modern nursing are closely associated in their historical growth and development as they are in practice. Emphasizing this theme, Mrs. Jensen has prepared an excellent history of nursing against a background of social and economic progress and medical advance. The history of nursing in this country and abroad, the part played by Florence Nightingale and the great nurses who came after her, and the roles of the Red Cross and the Army in the development of modern nursing are all adequately and interestingly discussed. This book should make medical men proud of the parallel advances in their sister profession.

Fractures and Dislocations. By Various Authors. Edited by Sir Humphry Rolleston, Bt., G.C.V.O., M.D., and Alan Moncrieff, M.D., F.R.C.P. Cloth. Price, 7s. 6d. Pp. 104, with 25 illustrations. London: "The Practitioner" in conjunction with Eyre & Spottiswoode, 1943.

This small book is full of good material. It is composed of a six article symposium which appeared in the British publication *Practitioner* for June 1940 and two additional articles. Each of the eight authors is a national authority; five are known internationally. The handy booklet presents the latest thoughts of recognized experts on highly specialized subjects. Illustrations are sparse. The index helps the busy practitioner in an emergency. The subjects covered are "The Diagnosis and Treatment of Fractures and Dislocations of the Pelvis and Hip Joint," "Common Fractures and Dislocations of the Knee and Long Bones of the Lower Limb," "Fracture-Dislocations of the Ankle Joint," "Common Fractures and Dislocations of the Clavicle and Shoulder Joint," "Fractures and Dislocations at the Elbow," "Fractures and Dislocations of the Wrist and Hand," "Head Injuries" and "The Treatment of Spinal Injuries."

Illustrations of Surgical Treatment: Instruments and Appliances. By Eric L. Farquharson, M.D., F.R.C.S.E., Major R. A. M. C. With a foreword by Sir John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery, University of Edinburgh. Second edition. Fabrikoid. Price, $7. Pp. 392, with 380 illustrations. Baltimore: William Wood & Company, 1942.

This contains a wealth of useful information presented in a practical and readily understood manner. The illustrations are excellent and well chosen; the text is brief yet broad enough to cover the subjects, which are comprehensively discussed. By the use of photographs and drawings the author has described methods of treatment and the types of apparatus employed in an ingenious manner. This book should be of especial value at the present time when a global war is in progress, but every physician will find information of pertinent value whether he is in the armed forces or in civilian practice. Fractures and orthopedic problems, intravenous therapy and injuries to the extremities are considered, and the book contains an extensive appendix showing surgical instruments and appliances.

Dictionary of Bio-Chemistry and Related Subjects. Editor-in-Chief: William Marias Malisoff, Professor of Bio-Chemistry at the Polytechnic Institute of Brooklyn. Cloth. Price, $7.50. Pp. 579. New York: Philosophical Library, 1943.

Although dictionaries have formed an integral part of scientific libraries for years, they often are inadequate to meet the needs in special fields. The Dictionary of Bio-Chemistry is "designed for readers of biochemical literature who might want the definitions of terms used more than a decade ago as well as of terms just coined." The idea for such a dictionary is commendable; it is unfortunate that the book falls short of expectations. Many definitions are too brief to be of much value, a few unnecessarily long, some misleading. Undoubtedly many of these faults will be corrected before the next issue appears. The usefulness of the book then will be vindicated.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

STERILITY OF SULFONAMIDE POWDERS

To the Editor:—In reply to an inquiry on sterilization of sulfathiazole powder in Queries and Minor Notes in The Journal, Oct. 4, 1942, page 1221, it is stated that "It is possible to sterilize sulfanilamide, sulfapyridine, sulfathiazole or sulfadiazine by heating at 140 C. for four hours. It is also possible to autoclave small amounts of drug in flasks at 15 pounds pressure for twenty minutes. This will sterilize the powder, but occasionally there is a tendency for the powder which has been sterilized in this fashion to cake in the flask." Would you advise if it is intended that the flask, in the autoclave, be open or closed? If the flask is open, the contents will be exposed to moist heat. If the flask is closed, however, the moist heat will be excluded and the material in the flask will be subjected to a dry heat equivalent to the temperature of the moist heat outside it. As it is also stated that 140 C. for four hours is necessary to sterilize the powder, is it possible that steam heat for twenty minutes could sterilize the powder in a closed container in the same way that it would in an open container when the contents of the flask are exposed directly to the moist heat of the autoclave? The latest supplement to New and Nonofficial Remedies, 1942, includes Sulfanilamide (Sterile Crystalline): 5 gram shaker-type package by Hynson, Westcott & Dunning, Inc., Baltimore. Other pharmaceutical houses are also offering for sale similar types of packages. These vary in minor details but all carry a common claim in that they have the word "sterile" prominently displayed on the package. There can be no question that the term "sterile" is intended in an absolute sense; that is, free from all bacteria, spores or other organisms. Assuming that the drug in these envelops is sterile at the time of manufacture, is it possible for the sterility to be preserved indefinitely in this type of container, which can be demonstrated to "breathe" air, evidently, through the folds of the paper? If, however, the air is not "breathed" through the folds of the paper but through the paper itself, which is unlikely, can paper of this type be considered capable of filtering bacteria? What effect would excessive atmospheric moisture have on the permeability of bacteria through the paper?

J. M. Bourque, M.D., Sorel, Quebec, Canada.

ANSWER.—First, sulfonamide powders may not be sterilized in the autoclave if they are in tightly closed containers. The steam must be able to reach the powder, and this is liable to cause caking. If the powder is sterilized by dry heat in paper envelops of good quality and well sealed, especially if a double envelop is used, there is little likelihood that they will become contaminated if kept dry and with ordinarily careful handling, as when kept in original cartons or in the first aid kits of soldiers. For the Army and for the medical trade the sulfanilamide powder is packaged in double paper envelops, six or a dozen such envelops sold in cardboard cartons wrapped in cellophane. Many such individual envelop packages (not in cartons) have been placed in the dust bags of vacuum cleaners in use in hotels and have been examined after six months of such abuse. They were found thoroughly black with dust and about 10 per cent of them were found contaminated. For the Navy the powder is packaged in single paper envelops and each of these is enclosed in a sealed cellophane envelop. The Navy prefers this package with a view to keeping out moisture. There is little likelihood of contamination through dry unbroken paper of fair quality, but molds and possibly bacteria might grow through moist paper, even as in a humid atmosphere during several days.

RINGWORM ABOUT PERINEUM—DANGER OF X-RAYS

To the Editor:—What can you tell me about the treatment of a tinea or fungous infection in a man around the scrotum and perineum? Would ultraviolet treatment clear up the infection? He has tried ointments with only temporary success. He has tried x-rays but is afraid of being sterilized.

G. E. Ramseyer, M.D., Plainwell, Mich.

ANSWER.—The greatest caution should be exercised in exposing the perineum and scrotum to x-rays because of the great sensitivity of the testes to their action. In the present instance x-rays should not be used at all, even though they may be effective against eczematoid ringworm. Eczematoid states of the scrotum are often exceedingly stubborn to treatment of diverse sorts. Ultraviolet rays in suberythema doses may be used but are not especially effective. Care should be given not to increase the dermatitis by excessive dosage because of the aggravating factors of heat and friction at these parts.

The diagnosis of ringworm infection should be checked by searching for fungi by direct and cultural methods. These infecting elements are not always found at the first trial. Tinea cruris is most often an extension process of eczematoid ringworm from the feet and toes. If found, here too the therapy must be directed to include these primary sites. Failure to take this precaution accounts for some failures of treatment given to the scrotal and crural areas alone. Less often than the feet and toes, the hands and fingers too are involved.

Local therapy alone is almost always sufficient to achieve a successful conclusion to these infections. If the dermatitis is acute in degree, wet dressings give the greatest relief. For this purpose solution of aluminum subacetate 1 part in 10 to 15 parts of water serves well. When the acuity of the inflammation has subsided, the wet dressings may be replaced with lotions at the genitocrural area. Calamine lotion may be fortified with a tar such as coal tar solution from 3 to 10 per cent or resorcinol 1 to 5 per cent concentration. A useful measure for the toes is to separate them by pledgets of cotton changed several times a day to keep the parts dry. Helpful too is a dusting powder consisting of 5 to 10 per cent sodium thiosulfate, 10 per cent boric acid and 3 per cent salicylic acid in equal parts of zinc stearate and talcum. When the chronic stage has been reached, ointments are the most useful. Whitfield's ointment mixed with three times the amount of petrolatum or the more modern cholesterinized or water miscible bases is often useful on the feet and on the perineum. While the full strength Whitfield ointment can be finally reached, this is ordinarily much too strong for the scrotum and nearby regions. Some people can stand it, but it is bold treatment for the majority. Instead of Whitfield's ointment various parasiticides may be put in grease bases and used in the same way. Some of these are resorcinol 1 to 10 per cent, ammoniated mercury 1 to 10 per cent, sulfur 1 to 5 per cent, beta-naphthol 1 to 10 per cent, chrysarobin 0.1 to 10 per cent, essential oils such as thymol 0.1 to 2 per cent and cinnamon oil 0.1 to 2 per cent. In general it is better to begin with the weaker concentrations and graduate to the stronger as the patient's tolerance permits. The palms and soles will usually bear considerably more aggressive treatment than the parts about the perineum. Water and soap should be avoided, but oils including mineral oil may be used as cleansing agents. Boric acid solution too is useful for the same purpose. Ordinary care will serve as prophylaxis against the spread of the infection to others in the family; infected persons should not frequent public baths or swimming pools.

EFFECT OF PSYCHE ON MENSTRUATION AND OVULATION

To the Editor:—It is a generally accepted fact that the menstrual flow usually commences fourteen days after ovulation; equally accepted is the fact that more or less profound psychic disturbance may suppress menstruation. Is this type of amenorrhea dependent on failure of ovulation? In other words, in an ordinary regular twenty-eight day cycle in which a delay of six days in the appearance of the period has occurred because of nervous anxiety and assuming that all suppressing influences are absent, when may the next menstrual flow be expected? Will pronounced psychic influences occurring in the latter third of a twenty-eight day cycle suppress the flow?

M.D., Illinois.

ANSWER.—The effect of the psyche on the menses is by no means clear, but there is no doubt whatever that there is a distinct connection between the psyche and menstruation. Among the numerous examples are the cases of pseudocyesis or false pregnancy, in which the prolonged amenorrhea and other symptoms are associated with an intense desire for children. Other examples are those of amenorrhea in unmarried girls who worry that they may be pregnant. In animals the connection between the nervous system and ovulation has been proved. In the rabbit, ferret, squirrel and cat, ovulation and luteinization never occur without the nervous excitation of mating. In fact, simple friction of the vulva or artificial stimulation of the cervix produces ovulation even where the ovaries are removed from their normal location and implanted elsewhere in the body. It has been shown that the ovulation and luteinization in these cases result from reflex stimulation of the anterior hypophysis. Therefore, in spite of the fact that the anterior pituitary gland is considered the regulator of the menstrual cycle, there is a center which in turn has a controlling effect on the pituitary gland. In many women the menses continue with their usual degree of regularity in spite of mental upheavals, whereas in others a slight psychic shock upsets the menstrual schedule. The most likely explanation for disruption of the menstrual cycle is that the psychic disturbance affects the gonadotropic function of the pituitary gland, which in turn brings about a change in the time of ovulation either by stimulating it prematurely or by suppressing it temporarily. However, there are instances in which this explanation cannot hold, as in cases of bleeding which occurs almost simultaneously with the psychic trauma and the sudden stoppage of the menstrual bleeding due to fright or other reason.

There is no certainty about the time of occurrence of the menstrual flow following the delayed menses. In some instances the next flow will begin when it would have done so had the delay not taken place, but in most cases a new cycle is begun with the delayed menses. Strong psychic influences occurring in the latter third of a twenty-eight day cycle can suppress a flow, but this occurrence certainly is not inevitable.

VAGINAL SMEAR AS GUIDE TO ESTROGENIC THERAPY

To the Editor:—Kindly tell me the present consensus on the use of vaginal smears for the evaluation of correct dosage of estrogenic hormones. In spite of the appearance of an article recently in a circular from a pharmaceutical company indicating that such examinations are reliable, it would seem from the study of the literature that opinions are rather divided.

Lawrence Parsons, M.D., Reno, Nev.

ANSWER.—A study of the vaginal smear is a fairly good indication of estrogenic activity and serves as a guide to therapy in patients undergoing treatment with estrogenic substances. This is brought out by R. B. Greenblatt (*J. M. A. Georgia* **30**:297 [July] 1941), who showed that vaginal smears may serve to indicate the degree of efficiency of estrogenic therapy. Geist and Salmon (*Am. J. Obst. & Gynec.* **41**:29 [Jan.] 1941) and many others have shown that the administration of estrogens to women demonstrating deficiency of these hormones will definitely produce regenerative changes in the vaginal mucosa if adequate dosage is employed, thus making a basis of therapy of senile vaginitis by use of estrogenic substances.

Another place in which the vaginal smear is of value in estimating the efficacy of estrogenic therapy is in cases of gonococcic vaginitis in children. Such therapy produces a mature type of mucosa and the presence of such a mucosa means that the gonococci have disappeared.

In the presence of infection or chronic irritation, however, the evaluation of the vaginal smear may be upset and one must be on guard to recognize such an infection when present and to interpret the smear findings in these instances accordingly.

MOLD INFECTIONS OF VAGINA AND CONTRACEPTIVE JELLIES

To the Editor:—Since molds are used in the manufacture of citric and lactic acids, could the gels containing either when used in contraceptive technic cause a low grade urethritis in a person whose mucous membranes are allergic to molds? The question came to mind when a young married woman came to my office with a slight irritation and a low fever; there were myriads of pus cells and many molds in a microscopic examination of the urine. From the history it appeared that the beginning symptoms were mild and coincided with the first use of the gel. There was a slight exacerbation following work by an ophthalmologist for a recurring conjunctivitis.

M.D., Georgia.

ANSWER.—Contraceptive jellies are, for the most part, made from carbohydrate materials which many molds find nutrient. For this reason nonirritant materials are added in low concentration to prevent mold growth. Since the contacts between these and any mold which may be picked up in the process of manufacture is prolonged, the concentration of the mold destroying ingredient need not be high. It seems improbable that molds which might be picked up in the course of the manufacturing processes could survive this prolonged contact.

Mold infections of the urethra and bladder do occur and could, of course, be caused by an infection brought to the urethral orifice by a contraceptive jelly. In view of the almost invariable presence of mold destroying substances in the formulas from which contraceptive materials are prepared, however, it would seem that these would be extremely rare and that other contacts might be equally apt to carry in air borne spores.

SIGNIFICANCE OF DIPHTHEROID ORGANISMS IN BLOOD CULTURE

To the Editor:—A man aged 60 with pyrexia of three months' duration and symptoms suggestive of bacteremia has had twelve blood cultures over the period of observation (three months). All but four have been negative. From these a diphtheroid organism has been recovered. One of two bacteriologists who have made the cultures say they are of significance. The other says they are not. Which is the correct position?

Wyndham B. Blanton, M.D., Richmond, Va.

ANSWER.—If diphtheroid organisms are found in the blood of the same patient on four of twelve different occasions it is important that these organisms be studied to determine whether they are the same culturally and antigenically. Their pathogenicity for animals should also be alike. If errors in technic are ruled out and the organisms are found to be identical, they are of significance.

EXPOSURE TO CARBON TETRACHLORIDE COMPOUND

To the Editor:—What are the possible poisonous effects from a duplicator roller cleaner consisting of half carbon tetrachloride with half Blankrola? It is claimed that absorption of this substance occurs through the hands or lungs and that it harms the bronchi and nerves.

M.D., Kentucky.

ANSWER.—According to Franco, Blankrola has been found to contain carbon tetrachloride in addition to a normal cleaning solvent. The toxicity of carbon tetrachloride in cleaning solutions is still not as well known as it should be in view of the seriousness and extensiveness of poisoning which can result from the inhalation or absorption of this substance. According to Davis the following symptoms may be caused by exposure to carbon tetrachloride fumes: slight headache, nausea (in many cases this becomes severe and lasts for several days), nervousness, mental confusion, loss of weight, dry dermatitis, secondary anemia, slight jaundice, chronic spasms of muscles, necrosis of the liver, acidosis, phosphaturia and irritative nephritis, loss of consciousness, coma and death, and visual disturbances such as blurred vision, color confusion and disturbance of near vision.

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INHALATION OF NITROUS OXIDE FUMES

To the Editor:—Will you kindly advise the best treatment for inhalation of nitrous oxide fumes—the fumes from the burning of photographic films?

Elmer W. Clarke, M.D., Norton, Mass.

ANSWER.—In the March 1943 issue (**12**:128) of *Industrial Medicine* appears an extended article by Fleming dealing with the handling of patients gassed with nitrous fumes. Emphasis is placed on the pathology, diagnosis and treatment of such cases. There are two periods of anoxia following nitrous oxide gassing, assuming that the quantity of exposure is sufficient to have brought about injury. The first occurs early after exposure and apparently is attributable to a spasm of the terminal bronchioles. The second arises with the development of significant pulmonary edema. Emphasis is placed on the necessity for absolute rest and oxygen inhalation; if edema appears, 25 per cent solution of dextrose-saline solution should be introduced intravenously. If cyanosis and venous engorgement arise, venesection may be indicated but under some circumstances is contraindicated. It appears that no benefit derives from such drugs as morphine, barbiturates, nikethamide, epinephrine or the sulfonamide compounds, although the latter may be useful in case pneumonia ensues. The article mentioned furnishes extensive information and a short bibliography.

HYPOSENSITIZATION TO GRAIN DUST

To the Editor:—A woman aged 31 is troubled greatly with asthma. Her husband operates a grain and feed mill, and several patch tests done with grain taken from his clothes show quite a positive result. I should like to know where I can have a sample of this grain made into a solution for desensitizing the patient. She has been given injections with grain solutions obtained from some allergen manufacturing company, and I wonder if using her own grain would be better, because she obtained no benefit from the injections.

Henry Friedman, M.D., Granville, N. Y.

ANSWER.—In the last few years a number of papers have been published regarding the relationship of dust from grain and feed mills to asthma and rhinitis, and there is no doubt whatever that these dusts are frequent causes of allergic symptoms in those who are exposed. Good results too have been reported by hyposensitization, beginning with small doses of a weak solution of the proper dust extracts and increasing the dosage and strength up to the patient's tolerance. Better results as a rule are obtained with extracts made from dust obtained from the patient's place of employment. The dust can be extracted by any pharmaceutical house which specializes in allergic products or by any allergist who is properly equipped to do this. In either case, instructions as to dosages should be furnished with the extract.

The husband should by all means change his clothes, so that he does not bring the mill dust home.